Managing Golf Course Nutrients

By Joel Jackson, CGCS

When it comes to managing golf course turf, we can talk about a lot of things, but producing good healthy turf boils down to three basic things: managing nutrients (fertilizers), managing water (soil moisture) and proper cultural practices (mowing, aerifying, verticutting, topdressing, etc).

There are no hard-and-fast rules, since every plot of land is subject to unique conditions: budgets, expectations, grass variety and, most of all, the soil and water quality dictate management strategies and tactics. Over time, most superintendents develop their own programs to fit their unique situations. But technology changes as scientific knowledge grows and successful superintendents modify their old programs to take advantage of new fertilizer products and university research recommendations.

A new consideration that may influence future nutrient management programs is regulatory impact. Currently the state of Florida is in the process of adopting a statewide Fertilizer Rule. *(See the fertilizer rule article in the Official Business section of this issue for more details.)*

Furthermore, several local governments are moving toward limiting the amounts of nitrogen and phosphorous that can be applied. Right now the emphasis is on the homeowner market, but the rule will direct sports turf users: golf courses, athletic fields and parks to follow the "Bermudagrass Recommendations" contained in *University of Florida Publication SB191* based on Dr. Jerry Sartain's work. On initial inspection, it would appear that the ranges of key nutrients are within acceptable limits to users and regulators, but they might differ from your current program, and many turf managers may have to lower their phosphorous totals. Documented soil and tissue tests may provide a variance for exceeding the annual or per-application limits in the rule. The rule likely will be completed by December 2008.

The point is that you need to take a good hard look at your current fertilizer program now. Is it based on habit – something that has worked for the last 5-10 years? Or do you vary your products, timing, rates or frequency of applications? Do you apply nutrients according to the calendar or according to the performance, appearance and clipping yield? How often do you take soil or tissue samples?

In the past few years I have had discussions with superintendents who have begun to monitor their fertilizer use more closely and are beginning to skip one or two previously scheduled applications. Fertilizer sales people may not like to hear that, but they also can hear the footsteps of the regulators coming closer, so it is a good time to seriously reflect on your program and tweak it wherever you can.

Besides making good environmental sense, it makes good economic sense because fertilizers aren't getting any cheaper.

In my gut I know that the proper application of fertilizers – whether home lawn, golf course, farm or grove – is not the major source of nutrient loading in our state's waterways. We are the convenient target because forcing people and municipalities to upgrade septic tanks and water treatment plants takes a whole lot of tax dollars and it isn't the popular thing to do. But the agriculture and greens industries can always do better and look for ways to modify our "old" practices to help make a difference, and then tell people about our best management practices and challenge the public and the government to do the same.

Winter Pines Program

By Joe Ondo, CGCS

Our overall fertility program hasn't changed much over the years. We do try different products when we have a problem green or tee, but after soil test results, there are basically no silver bullets or secrets to good healthy turf. Mother Nature will throw you a curve ball every now and then but soil and tissue tests will tell you what you need.

Our granular program on greens in the winter and spring is 0.5 lb. of nitrogen (N) in an 18-2-18 blend every two weeks and supplemented as needed with a liquid application of 12-0-0 plus iron, manganese and potash. In the summer we might stretch out the granular applications and also apply Primo at 2.0 ounces/acre. In the fall and early winter we will apply some Milorganite before and after overseeding and apply a 6-20-20 starter fertilizer. Once the seed germinates we will generally use a liquid fertilizer program over the winter golf season.

Our tees are small and we try for a pound of N per month and also use Primo and some liquid fertilizer if they are off color. We apply 25-3-10 plus iron or 6-2-0 during the winter. Our fairways and roughs will get a pound of N in the spring when we apply Ronstar on a 15-0-15 blend. We also apply 0.5 pound of N in a 24-5-11 blend plus iron in the fall and winter and sometimes in September after aerifying. A pound of 6-2-0 per 1,000 sq. ft. is used on the fairways when we overseed. A total of 3-4 pounds of N is applied to our fairways in the summer plus a monthly Primo application. Our roughs will receive 1.0 pound of N with the Ronstar in the spring and another pound of N in the fall with a Barricade application. All of these large areas are spread in-house with a tractor-mounted spreader.

We will usually spot-fertilize weak areas resulting from traffic, weed control or insect damage. Walk-up areas on our tees, around ornamental beds and ends of our cart paths also get spot-treatment.

Joe Ondo, CGCS

Our greens program will vary among the holes. Eight of them are push-up, built in 1964 with the origi-

A fairway blower can be used as a portable subsurface air pump for problem greens. Photo by Mark Jacobs

SUPER TIP

The Air Down There

By Mark Jacobs

We had an issue with the drainage on a couple of our greens here at Shell Point. This resulted over the years with issues of weakened, thinning turf and recently some outbreaks of pythium, which caused some large areas of turf loss. The disease was confirmed by a certified agronomist and proper identification was the key in allowing us to make a proper decision on treatment and get the greens back on the right track for recovery.

To correct the ongoing root cause of the problem – the persistent, overly wet, saturated soil profile – we made up our own version of a subsurface air-pumping unit by using our trailer-mounted Buffalo Blower, used for blowing off clippings and cart paths. The blower was connected to the greens' internal drain system with a 4-inch drain pipe using the bottom section of an old-style, plastic, dimple-top fairway marker and some good old-fashion duct tape.

After we hooked it all up and started the blower, the forced air began moving an incredible amount of excess water trapped in the pipes and also pushed out a strong odor of sulfur and methane gas build-up. This was a sure sign of anaerobic conditions that can lead to disease problems. After the water and gases seemed cleared up, we used a makeshift plug to seal off the vent on the other side of the green. This then forced some of the air up through the soil profile to send oxygen to the turf roots.

Sometimes the simplest things work best. We also had a TAS visit with Todd Lowe of the USGA to discuss some of these issues and to provide the necessary documentation. The portable blower was not a new idea in the business, but we wanted to share it as a reminder that it can be a relatively inexpensive and effective solution in case someone may be having similar problem with greens drainage issues. It sure made a big difference for us.

Superintendent Mark Jacobs inserts home made plug into the green's drain vent to force pumped air into the soil profile. Photo by Jim Carpenter

nal Tifdwarf on them. Nine are Tifdwarf sodded with Rapidturf and three are a mix of grasses – Tifgreen 328 and Tifdwarf. The mixed-turf greens are evaluated annually and rebuilt when the turf won't respond to our maintenance programs.

LPGA International

Managed by John Lammrish, CGCS

Superintendent John Lammrish has modified his basic fertilizer program at LPGA International over the years in response to soil-sample results, weather conditions, new fertilizer technology and operational realities.

Lammrish cited a couple of examples during a recent interview, "When I first came here, the fairway and rough program on the 250-acre Champions Course was 6-8 lbs. of nitrogen (N) per year. There were times we were baling hay in the roughs. I discussed the labor hours and the mess with our management team and they have allowed me to back off to 2.0 lbs. of N. We monitor the turf closely to make sure we don't allow too much weed pressure from the reduced fertility, but it has helped our budget considerably without sacrificing playability or appearance. On the smaller 100-acre Legends course, the program calls for around 6 lbs. of N per year on the fairways and 8 lbs. of N on the tees.

Super Tip Too

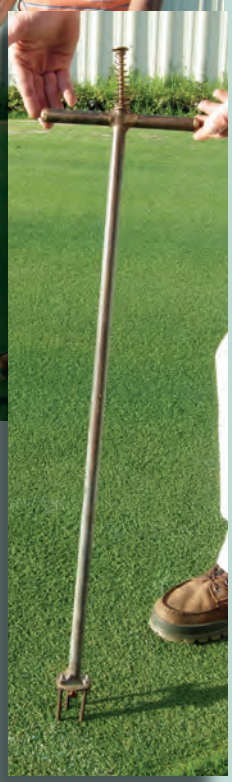
Weed Be Gone

Innovation is a way of life on a golf course. The latest in a parade of Rube Goldberg gadgets is a weed tool that Orchid Island Superintendent Matt Turner shared with me as he showed off his toolbox on wheels, in other words his utility vehicle.

Matt's favorite tool is a three pronged, weed-pulling tool constructed by his equipment technician, a simple straight hollow tube with a T-handle. Three bolts at the bottom serve as prongs and a plunger rod with a spring on top pushes the weed off the prongs.

Just insert the prongs into the ground over the center of the weed. Give a few twists and pull. Voila. Weed is gone. Push the plunger and shed the extracted weed into a container for tossing in the clippings dumpster. If you need more precise mathematical dimensions give Matt a call at 772-388-5545 for the specs.

Superintendent Matt Turner likes his simple and efficient weed pulling tool. Photo by Joel Jackson.



Close up of the weed tool so you can make your own. Photo by Joel Jackson.

Lammrish acknowledged that golf course conditions are driven by golfer expectations, but when the superintendent has credibility and trust of management, the course can benefit by allowing the professional turf manager to try modifications that can benefit the bottom line and the environment.

Lammrish said, "This past year has been a prefect example. Our normal 6-8 lbs. of N this year will be more like 4 lbs. total. I think the drier weather has slowed down normal plant growth and use of the nutrients. The course still looks good and our clippings yield is good, so we don't have to apply more than is necessary to meet expectations."

Under normal conditions Lammrish takes soil samples twice a year usually in April or May before the first aerification and then again in August or September after his last aerification. His reasoning is that if they need to adjust soil pH, the turf will be opened up and the fertilizer or amendments will be incorporated into the soil profile easier where it will be more readily available to the turf roots.

"We have greatly reduced our phosphorous inputs using 15-0-15 or 15-1-15 as our primary fairway and

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rough blend," said Lammrish, "Twice a year we have a contract spreader apply the spring and fall applications to the whole course at a rate of 1 lb of N per 1,000 sq. ft. The other applications are made in-house with a tractor-mounted spreader and we only do the fairways."

"Our greens receive 0.5 to 0.75 lbs of N per 1,000 sq. ft. every 8 to 12 weeks using a 17-1-10 blend from Harrell's or Verdicon. I tend to keep them lean and mean, but we will also supplement with a foliar feeding two weeks after the granular application using the old "Bentgrass Special" blend 28-8-18 at a rate of 0.125 lb. of N. We also will alternate that blend with a micronutrient mix high in manganese, magnesium and iron between the granular applications. On our overseeded fairways we apply 11-0-5 and 29-0-0 for color and health during the busy winter golf season."

Lammrish concluded, "To do it right, managing nutrients is a balancing act involving the needs of the plant to be healthy and look good for the customers, and using your budget resources wisely and considering the impact on the environment. I am a hunter and a fisherman. I don't want to do anything that will harm the environment. Golf course owners of course are concerned with the bottom line and revenues. It is a business, but as landowners they are increasingly becoming aware of their environmental responsibilities as well. A lot hinges on golfer education and their awareness and acceptance of our responsible course management."

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John Lammrish, CGCS

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