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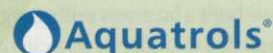
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By John Torsiello

Dialing in details

A growing number of superintendents are turning to more detailed analyses to better manage their fairways and greens.

Golf course superintendents can be a rather traditional group of professionals.

What has worked in the past will work now and in the future, some will tell you. That philosophy applies to soil testing. There are plenty of supers who like to keep it simple, thank you. Just ask Lance Johnson, CGCS, The Heritage at Westmoor Golf Club and Legacy Ridge Golf Club in Westminster, Colo.

"We use a very basic test for our soil analysis. It does include base saturation but we have had that included for years. Our budget doesn't allow us to get too fancy with our testing," he says.

Johnson certainly isn't alone. Many superintendents feel quite comfortable with some rather basic information, such as pH levels, to determine if their aerification processes are effective, as well as what type and how much fertilizer and other chemicals they should apply to their turf.

But a growing number of superintendents are turning to more detailed testing and analysis, viewing more expansive testing as a way to fine tune their turf management programs and insure complete and long-lasting health of fairways and greens.

pH is only a small piece of the puzzle, says Joel Simmons, president of EarthWorks, Martins Creek, Pa. "When we built a business selling organic fertilizer we realized we needed to understand a client's soil better," he says. "If we got the soils right our products worked better."



Soil tests are done to improve turf health and disease resistance.



Simmons and other soil experts believe that quality and in-depth soil tests should show how much nutrients the soil can hold. A beneficial test should also list the basic anions (negatively charged elements) and cations (positive charged elements), and should show the desired levels of calcium, magnesium and potassium, three vitally important nutrients that make up around 85 percent of the soil base saturation. It is also helpful if sodium, trace elements and hydrogen levels can be listed in a report to develop a more comprehensive picture of the soil.

Soil fertility tests are done to improve turf health and disease resistance; irrigation water uptake tests are used to determine how water impedes plant nutrition uptake; tissue tests are a tool to follow nutrition from the soil to the plant; and soil paste tests measure and compare water nutrient solutions between soil and plant.

Tissue testing can reveal interesting aspects of the soil profile, such as the somewhat disturbing fact that even when the soil chemistry seems in balance, the movement of nutrients may not be adequate enough to give the plant what it needs for proper growth.

Also, when a complete understanding of the soil is reached, it then becomes possible for superintendents to treat their turf, in effect "open it up," and allow air and water to pass through the soil profile. This will improve drainage, will create a sort of "check and balances" for pathogens, will mobilize nutrients, improve recovery and reduce fertility inputs.

Brian Smith, president of Arizona Sports Turf in Scottsdale, Ariz., believes superintendents are getting the message.

"It takes a while to change habits, but supers are seeing the value of more detailed soil testing and analysis," he says. "The superintendent will have the information to reach solutions to turf stress and not just apply Band-Aids over and over again on the problem. Some of the issues we find from

more detailed soil testing are way more serious than what would be indicated by base saturation testing."

Detailed information can be used by superintendents to "pick the right nutrient options," says Smith, which is "critical" to building an effective and sustainable program for turf.

Says Simmons, whose firm conducts some 15,000 soil tests a year, "We look at pH, yes, but we also look at the bigger picture – calcium, potassium and nitrogen levels – and gather knowledge on what the soil is doing both organically and chemically. The superintendent can look at a bigger picture and make choices that allow for a more fine-tuned management approach."

He likes to say, "It's like we are putting a 100-watt light bulb on a painting where there was only a 20-watt bulb before."

More and more superintendents are seeing the light.

"I'm not sure I would call them more sophisticated testing methods, I call them more thorough and complete," says Eric Snelsire, director of grounds at Glen Riddle Golf Club in Berlin, Md. He uses Analync testing offered through Floratine Products and Harris Labs because these tests show exchangeable and extractable nutrients.

"Therefore, it is showing us what is in the soil and how available those nutrients are to the turf plants. The Analync testing provides a complete picture of what is happening under the turf. In addition, the result recommendations are based on an extensive database of all their past turf samples, which take into account our region, soil, water and

"There is a little more expense involved but our fairways and greens are worth it." — Rob Davis, Tonto Verde Golf Club



Testing soil provides a benchmark for how to start and end the year.

environmental conditions. We can truly look at the impact of the soil on all facets of plant growth, health and sustainability.”

Brendon Byrne, superintendent at Llanarch Country Club in Philadelphia, has been using saturated paste extract tests from Soil First Consulting in conjunction with soil tests that measure “everything from base saturation to trace elements.”

He says, “I use the saturated paste analysis because it gives me a true picture of what

nutrient levels are soluble at that specific moment in the season. It is an advantage to have such a targeted and tangible set of information to review.”

Time used in testing soil is time well spent, says Paul Dotti, superintendent at Arcola Country Club in Paramus, N.J. He tests for pH and nutrient deficiencies twice a year, in the spring and again in the fall, to provide a “benchmark for how to start and end the year” and to allow him to plan for the following season if there is a need to apply lime or gypsum during the winter months. He also conducts tissue testing throughout the summer months to monitor what nutrients the plant is taking up. This allows him to make adjustments to fertility programs “on the fly.” Tissue testing is critical in “optimizing turf health and justifying fertilizer applications,” he says.

Dotti adds, “We use Norm Hummel and ISTRC. Hummel is excellent in assessing soil profiles and topdressing compatibility. If you consider a change in topdressing material, a sample of your green profile and topdressing should be sent for analysis. ISTRC does an

inch-by-inch analysis of the soil profile with 4-inch or 8-inch plugs, and they will make recommendations as far as organic matter content, infiltration rates, bulk density and air and water porosity. They also assess growing environments, as well as determine why a green may or may not be thriving.”

Ron Gribble, superintendent at Red Hawk Golf Club in Reno, Nev., utilizes a bevy of tests, including standard soil tests, paste extract testing, tissue sampling and irrigation water testing.

“We have based our entire fertility, soil remediation and integrated pest management programs on this testing,” Gribble says. “We have custom designed our annual programs using testing done every September, and our programs change from year to year based upon data collected. With help from our chemical and fertilizer partners, Redox Chemicals and Arizona Sports Turf, we prioritize deficiencies.”

Detailed soil testing has proved invaluable to the courses Billy Casper Golf manages, says Dan Evers, Mid-Atlantic director of agrono-

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my. "Our partnerships with John Deere Golf and CLC Labs have been extremely valuable," he says. "BCG superintendents have been able to reduce fertility inputs, while increasing turf density, quality and course aesthetics. It has helped us reduce money spent on fertilizer line items in our budgets."

Each BCG superintendent works closely with Dr. Chuck Darrah, owner of CLC Labs, who walks them through the soil tests. "Dr. Darrah explains the results and what impact the results have or will have on the turf," Evers says. "He then makes recommendations and helps the superintendents set up a fertility plan."

This "no nonsense" approach is key to ensuring that each BCG superintendent is being fiscally and environmentally responsible. "Dr. Darrah also helps the BCG staff navigate through the murky waters of the fad or snake oil products that are rampant in our industry," he says.

Rob Davis, superintendent at Tonto Verde Golf Club in Rio Verde, Ariz., also says detailed testing helps him "fine-tune" his turf

management. "There is a little more expense involved but our fairways and greens are worth it," he says. "The tests show us a variety of things, such as whether we should increase our aeration program or cut back, or if we should do light topdressing or be heavier with it. The better the turf is balanced the better it will behave."

Byrne interprets information in two ways. "First, I use experience as a golf course superintendent and my education in agronomy to determine a plan," he says. "Second, I read Soil First's summation and analysis of the test results."

Armed with such detailed information, Byrne has a guide for what type and what amount of fertilizers he needs to apply. In the case of sodium test results, it will determine if he needs to use gypsum.

Testing gives Snelsire the actual amount of calcium, magnesium and potassium bulk amendment recommendations for a three- to six-month period depending on soil types. "We also use some of the information to implement or determine the need to flush

the profile when amounts become excessive with any one nutrient, such as nitrogen or sodium," he says. "The testing has helped us reduce inputs or make strategic applications during certain times of the year to optimize plant health and provide greater growing environments for our turf."

Matt Fauerbach, Billy Casper Golf's director of agronomy for the firm's Northeast Region, says the company's superintendents view soil tests as baselines for their agronomic plans. "We are working with some courses on grid sampling," he adds. "This will provide a more accurate map of data across an area and is a more environmentally responsible approach that will ultimately prove to be more fiscally responsible as well."

"Although our testing budget has increased over the last few years, our chemical and fertilizer expenses have come down," Gribble says. "We are applying products exactly when and where we need them." GCI

John Torsiello is a freelance writer based in Torrington, Conn.

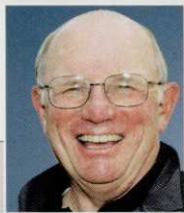
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Monroe Miller is a retired golf course superintendent. He spent 36 years as superintendent at Blackhawk Country Club in Madison, Wis. Miller can be reached at groots@charter.net.

REMEMBER WHAT WALTER SAID

Golf course work moves at a notoriously fast pace, faster than I realized when I was immersed in it as a superintendent. This spring I'm making that observation from my perch as a volunteer walking greensmower and a totally relaxed fairway cutter at the club that employed me for nearly 40 years.

A fast, almost frantic pace doesn't mean it's disorganized; quite the opposite. If the crew I am an occasional member of wasn't highly organized and carefully managed, the workload required for topnotch playing conditions wouldn't get done. But I see now that despite being a keen observer of nature, I missed a lot simply because I was so busy. The advent of portable radios, cell phones and affordable golf course vehicles cramped quiet, personal times even more. Any superintendent's time is severely challenged. To some extent, I tried to compensate by getting to the golf course at a ridiculous hour each morning, usually in the dark. And often times that worked; it gave me the chance to see a huge yellow moon sitting low over our sixth green, so low it seemed I could jump up and touch it. The sunrise was mine to enjoy, and dew on the golf course was unmarked by golfers or golf course equipment, sparkling like acres of diamonds. But too often this plan was sidetracked by the consummate drive to squeeze a little more efficiency from a day – helping get mowers ready, shutting down irrigation, fueling equipment and a dozen other tasks.

Nowadays, I can more easily assume nature's pace – slow and steady yet unrelenting, day after day. After a Wisconsin winter of 100 days of snow cover, this spring and my newly acquired privilege of moving slowly and watching what's going on around me on the course has been a pleasure. It's like I can follow, at last, Walter Hagen's advice from over 30 years ago: "Don't hurry, don't worry. You're only here for a short visit. Be sure to stop and smell the flowers."

We experience seasons because the earth's axis of rotation is tilted at an approximate angle of 23 degrees, 27 feet, 8 inches (it varies a little each year) from the vertical plane of its orbit. So if you are at the equator, the angle of tilt doesn't have much effect. But at the north and south poles the full effect

of this angle results in seasons of nearly full light and seasons that are mostly dark. Here in Wisconsin we are literally right in the middle and can fully enjoy four distinct seasons. And now it's spring!

In our town the March weather swings wildly – golf courses are actually open some years, and in others we may get 20 to 30 inches of snow. Years ago, when I was a college student, I did a phonological study of blooming dates of woody ornamentals, and such a project begins in March and doesn't end until June. I've always wanted to do that again,

Golf course work moves at a notoriously fast pace, faster than I realized when I was immersed in it as a superintendent.

and now I can. I would also like to note when the various bird species return here, which also begins in March, and now I can. I'd like to record when the ice leaves the five Madison lakes and the small pond on our course.

Spring is more earnest in April and really starts to assert itself. You can hear the spring peepers, see the turtles emerging from the water to sun themselves, watch the spring bulbs mature and count the wildflowers on the course, IF you take the time. Or if you have the time, which many superintendents don't.

When May arrives, it almost isn't possible to keep up with all of Nature's activity. The work required on the course "interferes!" If that describes you, fret not. Your time will come, like mine has. I can finally follow the simple advice of poet W.H. Davies, lines I wrote down many years ago:

"What is this life if, full of care,
We have not time to stand and stare?"

So if you see some older guy mowing greens with a pair of binocs and a loupe around his neck and a notebook on the seat of his course vehicle, it could be a retired superintendent finally taking Walter's advice. **GCI**

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Grasses gone *wild*

Besides enhancing a course's unique character, ornamental grasses reduce water, fertilizer and pesticide demands.

It's turf you want
to *run*
wild.

by Nancy Sadlon

The flowers and subsequent seed heads of ornamental grasses are diverse, ranging from understated to truly spectacular. From far left: *Pennisetum orientale*; *Erianthus ravennae*; *Pennisetum orientale*.



A superintendent's duties range beyond managing a golf course for playability. In fact, many are charged with not only presenting players a course with unique characteristics, but doing so on a constrained budget and by demonstrating sustainable land use. What many golf course superintendents might not realize is that incorporating ornamental grasses into their courses can help them accomplish many of these goals.

CHARACTER

Ornamental grasses can serve as fillers or specimens, border plants or background plantings and as groundcovers or screens.

Their adaptability and subtle beauty make them perfect companions to flowering plants and other woody ornamentals. And clumped together, ornamental grasses create an area requiring less water and fertilization than other planting beds.

Ornamental grasses are available in a wide array of colors, shapes, textures and sizes. The

flowers and subsequent seed heads are equally diverse, ranging from understated to truly spectacular.

Likewise, each grass species has its own unique form. They may form low compact mounds, tall screens or densely spreading mats. The foliage colors include various shades of green, blue and red, as well as variegated varieties having red, white or yellow foliage banded with ivory or yellow stripes.

In the fall, spring and summer their colors change to hues of red, beige or brown, providing a great winter garden accent. The

flower spikes also offer a diversity of colors.

Ornamental grasses also add a dimension of motion and sound to an environment. And often these animated movements will change with the seasons.

MAINTENANCE

Once established, ornamental grasses require very little care. Unlike greens and fairways, ornamental grasses are low-maintenance, have low water demands, attract few pests and have low fertilization requirements.

These durable, low-maintenance plants not only add distinction to a landscape during the summer months, but they are quite dramatic in a winter landscape, as well.

Grasses do not need to be cut down before winter. In fact, they remain attractive when left standing and the foliage helps insulate the plant's crown. In the spring, before growth resumes, superintendents are advised to

cut back the foliage to a height of 4 to 6 inches. Division depends on the spacing and visual appearance of the ornamental grass, as well as its overall health.

Plants suffering from die-out in the center should be divided to improve appearances. Division is done in the spring before growth resumes or in the late summer or fall after the growing season. Plants that bloom late could be divided in the spring.

Divided plants should be well watered the first season after planting to develop a solid root system. Established plants do not need regular watering, earning them a drought-tolerant reputation. The amount of watering depends on the grass species, the site and on the quality, size and desired growth rate.

Likewise, most ornamental grasses require low levels of fertilization. By keeping nitrogen levels low, lodging or flopping over can be kept to a minimum. Leaf color and vigor are good guides to nitrogen requirements. Application of one-half to one



Ornamental grasses come in a wide array of colors, shapes, textures and sizes. From far left: *Festuca glauca*; *Helictotrichon sempervirens*; *Miscanthus sinensis*; *Panicum virgatum*; *Liriope spicata*.



With few pests and diseases, ornamental grasses require little to no pesticide applications. Above: *Chasmanthium latifolium*.

“Ornamental grasses also add a dimension of motion and of sound to your golf environment. And often these animated movements will change with the seasons.”

pound of 10-10-10 fertilizer per 100 sq. ft. of garden area, or about one-quarter cup per plant, is sufficient. An application of a slow-release fertilizer just as growth resumes in the spring is enough to take care of the plant's needs throughout the summer.

For weed control, cultivate around grass plants. An application of mulch reduces the need for cultivation and watering, and it will keep in check those grasses that have a tendency to be heavy seeders. With few pests and diseases, ornamental grasses require few if any pesticide applications.

WARM- AND COOL-SEASON SELECTION

Grasses respond and start to grow based upon soil temperature.

Cool-season grasses will start to grow early in the spring and may remain semi-evergreen over the winter. Cool-season grasses also seem to do better and have better foliage quality when temperatures are cool or if they are given sufficient water during drought periods. If they are not watered during drought, then they will go dormant resulting in brown

foliage. These grasses may require more frequent division to keep them healthy looking and vigorous. If not, they will die out in the center.

For those grasses that remain semi-evergreen, you should only cut off the brown or winter-injured foliage in the spring. Some of the more popular cool-season grasses include fescues, blue oat grass (*Helictotrichon*), tufted hair grass (*Deschampsia*), and autumn moor grass (*Sesleria*).

Warm-season grasses will do better during warmer times of the year and remain good looking even when temperatures are high and moisture is limited. Warm-season grasses do not begin to show growth until the weather becomes stable and the soils warm. The previous season's growth usually browns out in the fall and requires the cutting back of plants to a height of between 4 to 6 inches in the spring. Warm-season grasses usually do not require as frequent division as cool-season grasses. Some warm-season grasses include northern sea oats (*Chasmanthium*), Japanese silver grass (*Miscanthus*), hardy pampas grass