

Get to know your  
**SOIL**

## Expert advice for performing accurate soil tests.

BY ALISSA CURTIS

Soil testing is just one of the many ways golf course superintendents work to improve and maintain primo course conditions. Adam Kloster, superintendent at Industry Hills Country Club in Industry Hills, Calif., a 36-hole private club, considers soil testing the most important part of golf course maintenance.

“To me, that’s one of the last things I’d cut or stop doing,” says Kloster, who spends about \$4,000 annually on soil testing for the club’s two courses and conducts tests four times a year. “If you don’t know what the plant needs, what are you going to buy?”

Every penny spent on soil testing is worth the return on investment for Kloster.

“Spending \$5,000 now might save you \$6,000 in the long run,” he says.

Kloster, who became superintendent at Industry Hills last year, also says soil testing is the best way to become acclimated with a golf course and understand the turf and soil a superintendent is working with.

“It was the first thing I did when I came to Industry Hills,” Kloster says. “I wanted to get a base to see what was in the soil before I started implementing my maintenance plan. It’s another tool we have to use to help us make some better decisions and take some of the guesswork out of the job.”

#### HOW OFTEN TO TEST

Many superintendents receive varying suggestions about how to properly maintain nutrients within soil and how to treat problematic elements.

Khlar Holthouse, superintendent at Niagara Falls Country Club in Lewiston, N.Y., says consultants he’s worked with have given him different recommendations about how to treat a specific soil problem and how many times soil testing should be conducted each year.

Corey Angelo, a consultant with Las Vegas-based Soil and Water Conservation, recommends superintendents who manage courses in desert climates conduct soil tests four times a year. Because many courses in the desert irrigate with effluent water, the elements – good or bad – that come from the water end up in the soil.

“Much of the water out there is reclaimed water,” Angelo says. “It’s really heavy and it has some negative effects, so you want to test the water more than anything to see what changes there are.”

In the North/Northeast region where natural rain does most of the irrigating, soil sampling is only necessary two or three times a year, Angelo says.

Holthouse, who tests soil twice a year, says the soil at Niagara Falls Country Club contains the proper nutrients because the heavy clay soil absorbs the rain and retains the proper nutrients.

Further, the cold winter months in the North cause little change in the soil, so testing during the winter season is not necessary.

Tim Vanini, Ph.D., president of New Dimensions Turf based in Buffalo, N.Y., only suggests soil testing once or twice a year. Both consultants, however, agree the number of times superintendents conduct soil testing annually depends on the golf course’s climate.

#### TESTING TIPS

Angelo and Vanini say superintendents are generally knowledgeable about the soil testing process, but they tend to make a few common mistakes during the soil sampling process.

One mistake is varying the depths of soil samples taken, Angelo says. For instance, a

superintendent may take one soil sample at a 6-inch depth and another at a 2-inch depth. If the samples are taken from different depths, the numbers received from soil tests are not comparable, and do not accurately indicate how the soil is changing.

Another mistake is comparing results of certain soil tests during different times of the year, Angelo adds. Comparing the results of a soil test from a certain putting green sampled in April and again in July will yield different and incomparable results. Standard soil tests should be compared year to year, whereas soil paste tests should be compared every few months. Angelo says the concept is similar to a person weighing themselves.

“If you’re going to weigh yourself once a week, you should weigh yourself in the morning of every Saturday, for example,” he says. “If you weigh yourself in the morning Saturday then again Saturday night, obviously you’re going to get two different weights.”

Angelo also suggests that superintendents become more familiar with the acceptable range of numbers in soil test results. Some labs will send superintendents numeric re-


sults of the test, but do not thoroughly explain what those numbers indicate.

To ensure the most accurate soil testing, superintendents should always take random and representative samples of the soil, Angelo says. Additionally, Angelo suggests sending at least two measuring cups full of soil to the lab in case the test needs to be run twice.

For diagnostic core analyses, Sam Ferro, president and technical manager of Turf Diagnostics & Design, says superintendents should pack both ends of the core sample tight using newspaper, and should seal the packed sample with duck tape to ensure the core stays intact (see “Test Types,” below for more information).

Finding a good reputable consultant to work with is also important, Angelo says, and the process is similar to finding the perfect doctor. “All laboratories aren’t the same,” Angelo said. “It’s no different than finding a doctor. Some doctors are good and other doctors are really good.” **GCI**

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## TEST TYPES

**A**lthough soil testing continues to be the most widely used procedure for sampling soil, tissue testing is becoming increasingly more popular, says Tim Vanini, Ph.D., president of New Dimensions Turf based in Buffalo, N.Y. Tissue testing, the collection and testing of the actual grass plant, is beneficial for superintendents to use for testing sensitive turf and soil areas of the course, he says.

Unlike standard soil sampling, tissue sampling is efficient and more accurate in testing for nitrogen levels in the soil, and results can be returned to superintendents within 24 hours.

“With tissue sampling you can find out right away essentially what is in that plant and is that plant starving for nitrogen,” Vanini says.

In addition to conducting soil tests regularly, Sam Ferro, president and technical manager of Turf Diagnostics & Design, suggests that superintendents conduct an annual diagnostic core analysis, which measures the ability for soil to retain water and nutrients.

Turf Diagnostics & Design is a laboratory located in Linwood, Kan. The lab specializes in physical testing for golf courses, sports fields and landscape industries, as well as pairing new topdress sands with already existing sands on courses, to maximize compatibility between the new and old sand.

Core samples are taken from the top of the green to the subgrade, so the depths may vary among courses.

Physical tests can help superintendents who are experiencing specific problems with course greens, need guidance to new aeration practices, or simply want to conduct an annual check-up test, Ferro says.

Physical tests also are a great tool for superintendents to use when presenting information to a course’s greens committee, Ferro says.