

DIAGNOSTIC SERVICES

Soil blender taking
a stockpile sample.

TURF DIAGNOSTICS & DESIGN

**WHY
TEST?**



TURF
DIAGNOSTICS
& DESIGN
"Managing the Elements Through Science"

At the recently concluded Asia Pacific Golf Summit, I took part in a session titled “Diagnostic Services – You Can’t Live Without It”. While the title of that session may seem a bit ambitious, the feelings behind it are right on target. Soil, sand, water and turf testing are an integral part of golf course construction and maintenance.

Laboratory analyses during golf course construction and renovation play a vital role in the quality control process. Routine fertility testing can help to guide management programs and prevent potential problems. Diagnostic testing pinpoints chemical, biological or physical problems, and provides potential solutions. Understanding when to test and what to test can have a positive impact on the profitability, playability and longevity of your course.

CONSTRUCTION TESTING

Most golf course sites do not have soils or sands that are adequate for high-end golf greens or bunkers. Some sites do not have soils that are adequate for tees or even fairways. Testing the on-site soils (and irrigation water) prior to construction can outline potential agronomic risks and indicate whether off-site soils and aggregates should be brought in.

Materials testing helps to ensure that quality soil, sands and amendments are selected for construction of the golf course. Materials used during construction not only affect construction processes such as grow-in, but also have a profound influence on the long-term success or failure of the golf course. Quality turf grows from quality soils. Architect specifications or other construction guidelines typically have requirements for tests that must be performed and standards for acceptable test results. The USGA recommendations for Greens Mix construction ([http://www.usga.org/course_care/articles/construction/greens/USGA-Recommendations-For-A-Method-Of-Putting-Green-Construction\(2\)/](http://www.usga.org/course_care/articles/construction/greens/USGA-Recommendations-For-A-Method-Of-Putting-Green-Construction(2)/)) are an excellent resource for information regarding testing sands and amendments.

Construction material qualification programs usually consist of three phases:

1. Initial Materials Evaluations

Representative samples of sands, aggregates, etc. are sent to the laboratory to evaluate whether they meet project needs or specifications. Because properly sized sands and gravels ensure effective water and nutrient retention, a particle size analysis is one of the first tests performed on the samples. The particle size analysis provides

information on aggregate grain size, which can be used to approve, reject or suggest modifications to materials. Aggregate suppliers can often use the lab data to make modifications to their production processes in order to create acceptable materials.

2. Performance Testing

Once acceptable materials are found, the materials are further evaluated for performance characteristics. This testing typically signals the end of the materials selection process and enables establishment of benchmarks that can be used throughout the construction of the golf course.

Performance testing data provides information that will enable the construction and design teams to engineer soils with optimum drainage and retention properties. A properly designed and constructed golf course will provide better growing conditions, better playing conditions, and can reduce future water and chemical input needs.

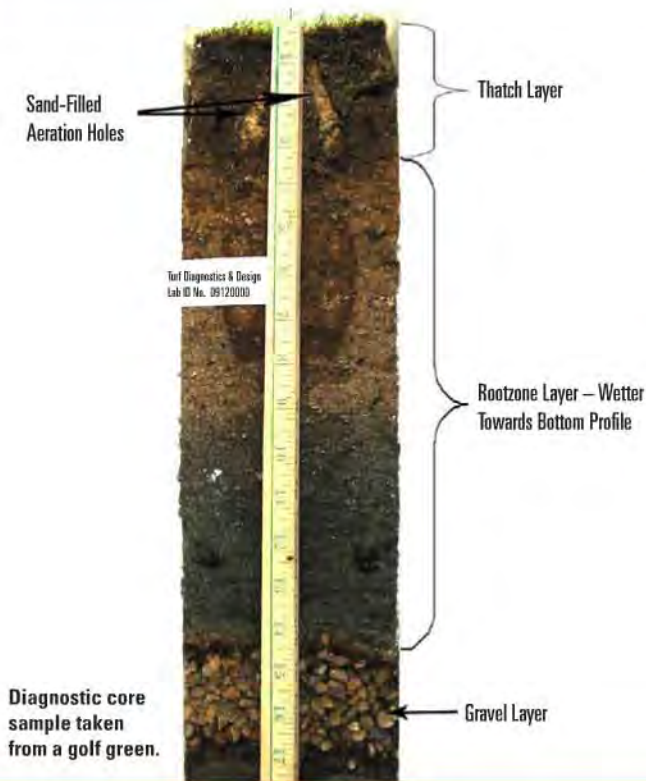
3. Quality Control Program

The quality control (QC) phase involves testing construction materials that are being shipped to the golf course. Construction materials are typically stored in large stockpiles. Samples are taken from the stockpiles, and evaluated for compliance with the established benchmarks. Test results for QC samples are compared to the benchmark, so that the stockpiles can be rejected or approved based on their consistency.

TESTING FOR GOLF COURSE MANAGEMENT

Testing is a tool that supplements the turf manager’s knowledge. Although quality turf managers know when the course is stressed or healthy, routine testing programs provide additional insight into the condition of the golf course.

Nutrient tests are a low-cost tool that can provide big paybacks. A properly interpreted soil, leaf tissue or water analysis report can guide fertilizer applications or provide insight into the cause of turf or drainage problems. Abnormal test results can often indicate troubles that aren’t yet apparent in the turf. Maintenance practices can be



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tailored to prevent problems from happening.

Need to demonstrate that your golf course uses best management practices and has concern for the environment. Routine testing reports provide proof of your efforts.

Sound scientific data is a powerful tool for demonstrating the effectiveness of golf course management programs. Unbiased testing performed by independent accredited laboratories adds credibility when dealing with government authorities, other interested parties or the public

It is a good practice to have soil samples tested at least on an annual basis. Many golf course managers prefer more frequent testing of high maintenance areas such as greens.

DIAGNOSTIC TESTING

When there is a problem on the golf course, diagnostic evaluations can provide a means to discover possible causes and identify potential solutions.

Diagnostic core testing (also known as profile core testing) involves a set of procedures for evaluating the physical and chemical properties of golf greens. Cores act as windows into the inner workings and make-

up of the green. These windows provide information that cannot be obtained from any other practice.

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Golf course managers use diagnostic reports for recommendations regarding the need for changes to management practices, determination of whether additional maintenance steps are needed, or documentation that renovations are necessary. Diagnostic cores analyses also provide information for turf systems that are performing well. Testing data demonstrates positive results from maintenance efforts and establishes baselines for future comparisons.

Hopefully this article has introduced you to the variety of areas where laboratory testing can benefit golf course construction and maintenance. While you may be able to live without diagnostic services, using science to supplement your management decisions can make life on the golf course much more successful.

