Golf Green Health Indexing

EUROPEAN TURFGRASS LABORATORIES

INTRODUCTION

Year round greens performance is pivotal to the success of any club. To achieve this requires a number of technical elements to be within desirable ranges. Golf Green Annual Health Indexing provides key data characteristics to assist course managers. These include nutrient status, incremental thatch content (%), in-situ saturated conductivity, total porosity, air-filled porosity, water-filled porosity and bulk density (compaction).

ETL offer various courier (postal)-based packages for between 3-18 Greens to suit all facilities. Sampling kits will be provided within the cost of packages.

Testing packages will come with a technical report to support Course Managers in communicating with their clubs the necessary works along with benchmarking progress towards targets levels for their venues.

COMPREHENSIVE HEALTH INDEXING

Full Elemental Analysis (includes pH, P, K, Mg, Ca, S, Mn, Cu, B, Zn, Mb, Fe, Na & CEC)
Organic Matter Profile (4 increments)
Undisturbed Saturated Hydraulic Conductivity: 0-75mm
Total Porosity, Air-Filled Porosity, Water-filled Porosity and Water Retention: 0-75mm
Bulk Density: 0-75mm

MODERATE HEALTH INDEXING

Full Elemental Analysis (includes pH, P, K, Mg, Ca, S, Mn, Cu, B, Zn, Mb, Fe, Na & CEC)
Organic Matter Profile (4 increments)
Undisturbed Saturated Hydraulic Conductivity: 0-75mm

BASIC 1 HEALTH INDEXING

Full Elemental Analysis (includes pH, P, K, Mg, Ca, S, Mn, Cu, B, Zn, Mb, Fe, Na & CEC)
Organic Matter Profile (4 increments)

BASIC 2 HEALTH INDEXING

Routine Nutrient Analysis (includes pH, P, K, Mg)
Organic Matter Profile (4 increments)

FULL ELEMENTAL ANALYSIS

ETL provide nutrient analysis using various extractants for different parameters and use the minimum sustainable nutrient requirement status and ratio guidelines for recommendations on further applications.

ORGANIC MATTER PROFILE

Organic matter (%LOI) is present in the profile within all golf greens and its management and reduction is generally one of the most contentious issues within a golf club.
Measuring the organic matter at 20mm segments in the greens is the only method through which organic matter can be accurately measured and subsequently managed. These results can be used to determine how often and the best practice to de-thatch your greens. Course Managers can also compare themselves against trends and averages as to where organic matter levels should be. Testing the organic matter at different depths can also help assess the areas in the profile where improvements are required.
Each core is divided into 4 increments, usually 20mm. Each increment is tested by Loss-on-Ignition using the ASTM Standard: F1647 (Method A) "Organic Matter Content of Athletic Field Rootzone Mixes".

UNDISTURBED SATURATED HYDRAULIC CONDUCTIVITY & POROSITIES

This is a ETL developed test which accurately analyses the physical performance of the golf green as the profile sits in the green with the grass cover in place. The result given is accurate and a true reflection of the in-situ rootzone. Performance testing includes: saturated hydraulic conductivity, total porosity, air-filled porosity, water-filled porosity and water retention. The porosity testing gives an indication of the amount of air-filled and water-filled pore spaces present in the rootzone in the compacted state. The ideal rootzone should consist of a good balance of air-filled and water-filled pore spaces leading to favourable drainage properties with enough moisture retention for grass growth.

BULK DENSITY

The bulk density of a rootzone is a measure of how tightly packed the particles are in the sample. Under ideal conditions, the bulk density of a soil is a measure of soil pore space and can therefore provide important information on the degree of compaction on golf course greens.

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FOUR EASY STEPS

STEP 1:
Call ETL to arrange for your sampling kit to be sent to you, together with relevant paperwork. This will be couriered at no cost to the client.

STEP 2:
Upon receipt of the sampling kit, follow the instructions below to take sample each test correctly. Package the cylinders/samples up tightly in the same box supplied. Don't forget the paperwork!

STEP 3:
Call ETL who will arrange for the uplift of your samples to be couriered directly back to ETL.

STEP 4:
Test results will be issued when completed. Data collected on an ongoing annual basis will also be collated.

Sampling Advice

Undisturbed Cylinders – For S. Hydraulic Conductivity / Porosities / Bulk Density (3 cylinders p/green)

Take off cylinder lids from either end.
Place tapered edge of cylinder onto the ground.
Place wooden block on top of cylinder & knock into the ground until the grass is flush with the top of the cylinder (important that the wooden block is used to prevent any damage to the metal cylinder as this could affect results).
Remove cylinder from ground and replace lids on either end.
Record the sample location with corresponding cylinder number.

Sample Tubes – For Organic Matter Cores (5 tubes p/green)

Remove steel tube from sample bag.
Hold steel tube on the grip covered end.
Push sample tube into the ground "twisting" slightly.
Using body weight, push into the ground until cylinder is full.
Leave sample in tube.
Use tape provided to cover each end of the sample tube to secure the sample remains in place.

Plastic Bag – for Full Elemental Analysis / Routine Nutrient (500g p/green)

An auger or similar tool should be used to remove samples up to 6" deep in a random fashion across the area to be tested (a W pattern over the area is suggested).
The turf and thatch should be removed and the cores combined to form a composite sample of the green or area of the pitch to be tested.
These should be bagged, labelled clearly and submitted for testing.