



THERE'S A TEST FOR THAT

▲ Author Sam Ferro busy at work in his lab in Linwood, KS.

Testing of soil, turf, and irrigation water now plays a very important part in building and maintaining quality fields. A variety of laboratories with expertise in various disciplines specialize in sports turf testing and are eager to assist the sports turf manager. Whether it's routine soil fertility management, disease diagnostics, drainage evaluations, or one of the many other issues that affect turf managers, there is a test for that. This article is intended to provide a brief introduction to

some of the tests that are available and information on how they may aid in providing successful fields.

NEW FIELD CONSTRUCTION

Sand-based athletic fields typically require soils and drainage to be brought in from off-site to construct the field. Before any soils are used for construction, they must be tested to determine compliance with project specifications or goals. The laboratory may also prepare trial blends of the sands, soils, and/or amendments in efforts to assess and optimize performance of the rootzone materials. Quality control testing is performed during construction to ensure quality consistent materials are used.

Drainage gravel should be tested for both natural and synthetic turf construction. For natural turf, gravel is assessed for performance and compatibility

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with the rootzone. Synthetic turf gravel should be tested for drainage and stability.

Typical construction related laboratory tests include particle size analysis, mix ratio testing, infiltration rate testing (also known as percolation or permeability), and soil porosity evaluations.

ROUTINE MAINTENANCE

Soil nutrient testing should be part of every athletic field manager's tool bag. Macro-nutrient and trace element testing allows the turf manager to monitor current conditions and determine a baseline for their fields. This testing also provides a check of the effectiveness of fertilizers and soil amendments, and it offers the ability to adjust products and fine-tune applications based on science.

Samples should be sent to labs that specialize in turf testing. These labs will provide test results along with interpretative guidelines to aid in understanding

the data. Recommended testing intervals vary depending on intensity of management. Low input fields may only need testing every 2-3 years, while higher input fields benefit from annual testing.

Plant tissue analysis offers a snapshot of the nutritional status of the turf at the time the sample was taken. It provides information on the relative health of the turfgrass and interrelationships between all essential plant nutrients. Managers can determine if a specific nutrient is lacking before symptoms appear. When tissue testing is used in conjunction with a soil analysis, it can provide information on critical nutrient levels and how best to correct problems.

Irrigation water quality can be an important issue for sports turf managers. This is especially true for those who are using recycled water or gray water to irrigate fields. Important factors to evaluate are sodium content, carbonate and bicarbonate content, total dissolved solids, and chloride amongst other analytes. These parameters can affect soil and turf quality, as well as the irrigation system. Testing to monitor irrigation water quality can help prevent problems from arising with turf and equipment.

Many turf managers don't realize that topdress materials should be evaluated before use. Layering can occur if too fine of a topdress is used over the existing soil. When a finer soil layer builds up over an underlying coarser layer, there is a tendency for excess water to be held in the upper layer. This can lead to increases in disease pressures, shallow rooting, black layer formation, or excess surface compaction. A simple particle size test can determine topdress/rootzone compatibility and limit the potential for layering.

Testing of baseball/softball skin areas can help to pinpoint mix needs before purchasing sand, clays or amendments. Skin test results can be compared to industry standards for guidance regarding maintenance needs. Multi-field managers can use test results to aid in creating consistent performance throughout the complex.

Routine testing of synthetic turf? Yes, even artificial fields can benefit from analytical services. The consumer products safety commission and leading industry groups recommend biennial (every other year) Gmax testing for synthetic turf fields. In addition to Gmax analysis, synthetic field evaluations should include height of fibers, infill depth, inlay and seam analysis. This data supplies the information needed to show whether fields are in compliance with industry standards, pinpoints problem areas and provides recommendations for remedying trouble spots.

PROBLEM DIAGNOSTICS

It is extremely important to diagnose and eliminate turf problems before they become major issues.

Turf growth problems are often a result of improper nutrient levels. Soil and plant nutrient evaluations can provide guidance to correct and optimize growing conditions.

Many turfgrass diseases and problems look quite similar, making

visual diagnosis difficult. For an accurate diagnosis, samples can be sent to a turf pathologist. These scientists evaluate turf samples for pathogen signs and disease symptoms, identify problems, and make recommendations regarding management of the problem.

Every field has some pathogenic nematodes feeding on the plant roots. Many nematodes are harmless to plants, but others can cause damage. Nematode testing can indicate which nematodes are present, whether they are harmful, and provide guidance regarding control of pathogenic species.

Diagnostic profile core testing provides the ability to peer down below the surface of the field, and to see how the rootzone and drainage are working (or why they are not working). Intact subsurface soil samples (usually 6 to 16 inches deep) are broken down and evaluated at various depths throughout the soil profile. This allows for in depth portrayal of soil composition, soil layering, water holding and drainage characteristics. By providing detail on current soil conditions, profile core reports are especially beneficial when making field renovation decisions.



SAMPLING

The test results generated by the lab are only as good as the samples submitted for testing. If samples do not properly represent the field, then test results may lead to incorrect conclusions and recommendations that not only do not help but may

harm the field. Thus it is crucial that proper sampling techniques are performed. Different tests may require varying sampling and sample shipment requirements. If you are unsure of appropriate sampling techniques contact the testing lab for instructions.

As you can see, there is indeed a test or tests available to prevent, diagnose, and/or treat a multitude of field conditions. Most laboratories have personnel that are ready to discuss your particular situation before testing, and they are also ready to help you interpret and understand test results. Make testing a part of your turf management program, and you will see a positive impact on the appearance, playability, longevity and profitability of your sports fields. ■

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