



Sports Field Tips: **Soil Testing for Success**

When thinking about high-performance sports fields, it's useful to consider the analogy of the iceberg: what you see on the surface is visually stunning, and captures your imagination, but it represents only a small percentage of the big picture. What goes on *below* the surface of your sports turf — the nutrient levels, soil composition and drainage patterns to a depth of several feet — determines to a large degree the success of what happens *above* grade.

A careful agronomic analysis of your site, therefore, is a key step in any sports field construction or renovation project.

New field construction

The first priority in new field construction is an in-depth study of the site during the pre-design phase. This analysis should be performed by a soil scientist that specializes in sports turf soil evaluation.

Test pits should be dug with a backhoe (do not use an auger) to a depth of 7-8 feet to determine:

- depth and quality of topsoil
- makeup and depth of B and C horizons
- drainage characteristics of all soil horizons
- if site has been previously disturbed (or is undisturbed)
- depth of water table as indicated by mottling
- compaction and at what level it occurs
- depth of any existing ledge

The information gained from this process is invaluable for determining:

- suitability of the topsoil — and the amendments and treatments required to improve soil composition
- consistency and suitability of the subsoil — and the measures needed to improve their performance
- whether blasting is needed to remove ledge
- the need and design for subsurface drainage

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Renovation projects

For existing fields, the following tests are key components to site evaluation:

- **Nutrient analysis:** Core samples should be pulled to a 3-inch depth in a W pattern over the entire field to help identify the nutrient needs of the turf grass. Soil tests should include pH, buffer pH, phosphorus, potassium, calcium, magnesium, base saturation, iron, manganese, zinc and copper.
- **Soil textural analysis:** Used to determine the physical properties of the rootzone, a soil textural analysis is invaluable for determining what cultural practices and materials should be used in the maintenance of your field. Tests should include sand, silt and clay percentages by hydrometer method and a sand particle size distribution report.
- **Organic matter test:** It is also a good idea to test your rootzone for organic matter content. For good athletic turf, 3-6% organic matter is desirable.

If you require all three of these tests, combine them for a Soil Quality test.

Tests for problem fields

- **Tissue tests:** Testing the grass plants' tissue in problem areas can give an indication of the effectiveness of your fertility program and how the grass plant is responding and utilizing the nutrients.
- **Soil physical diagnosis, undisturbed samples:** Pulling an undisturbed soil sample enables the analysis of two layers within the profile. The column is typically a 12-inch column, 2 inches in diameter. Four samples from the field are required. The test should be performed by a certified L2LA Lab.

The physical diagnosis should include infiltration total porosity, bulk density, aeration and capillary porosity at 30 cm tension, organic matter content and full water release curve.

This test is invaluable in determining how to correct existing soil problems and provides data to help determine the proper management of your fields.

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