

SOIL TESTING FOR YOUR CLIENTS

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Soil testing is the foundation in building a solid turf management program. Without proper balance of the basic macro and micronutrients in the soil, the soil and the plant suffer. In the past, soil testing has always involved looking at the basics of NPK and pH. Today, we have a broader understanding of how a soil works and more advanced testing methodologies, which provide the turf grass manager with much more information to help build a healthy soil management program.

A healthy soil is balanced by looking at the basic approach of chemistry, physics and biology as one entity. The first limiting factor is always chemistry. This is where a good soil testing protocol can be of help. By providing the soil with the appropriate nutrient load, as identified by a complete soil test audit, soil flocculation can take place. As the soil opens physically, more air and water can move through the soil pore space, creating a better environment for the proliferation of soil microorganisms.

A good soil testing protocol will utilize many different tests, but should always start with the standard soil test. This test should identify many of the following; CEC, pH, organic matter percentage, the amount of basic anions and cations, base saturation and trace nutrients. This information will help to determine the sufficiency levels and the balance of these important nutrients. Understanding how to read this test and what each line item represents is important in building an effective and sustainable soil fertility program. Michigan soils are unique and create challenges that other areas of the country do not experience. Many soils and most sand-based soils in the state are calcareous in nature. This high calcium profile presents issues with physical structure, soil pH and balance between other needed nutrients. Understanding the relationship between calcium, magnesium, potassium and sodium is important in creating a healthy soil environment in which to grow healthy plants.

Other soil tests that can be an important aspect of a complete soil testing protocol are water tests and water soluble paste extracts. On irrigated soil, a water test is essential to help understand what impact irrigation water may have on the nutrient load and balance of the soil. Poor quality water can create significant problems for the turf grass manager. High levels of sodium or calcium in the water will impact soil and plant quality. These “red flags” need to be identified so that appropriate steps can be taken to either treat the water or to adjust the soil fertility program to compensate for the poor quality water. Testing the tank mixing water is also very important, specifically, testing in order to adjust the water pH. High water pH in a chemical tank mix can result in poor chemical or fertilizer performance.

The water-soluble paste extract is a soil test that is starting to become a significant tool in the turf industry. This test uses de-ionized water to extract the most soluble nutrients off the soil colloid. It provides indications as to what may become soluble to the plant in the presence of soil water. The standard soil test shows what is held tightly on the soil colloid, while the paste extract test shows what may be more immediately available. This test can be a very good tool for the calcareous soils of Michigan. Typical extraction methodologies use very acidic solutions to pull nutrients off the soil colloid. On high calcium soils, this type of extractant may over- exaggerate

the true nutrient load and can make fertility recommendations more difficult. The paste extract is another tool to help the turf manager gain a more complete picture when building a fertility program.

When considering plant fertility, soil testing is the first place to start. It will provide vital information on nutrient loads and their balance. When evaluated properly, a soil test can help to create a better physical environment for beneficial soil bacteria. Building healthy soils is the first start to healthy plants.