

Understanding a Media Analysis Report

The purpose of a Media Analysis is to determine the availability of nutrients in the growing media that are required for healthy plant growth and to identify any fertility concerns that could constrain that growth.

Saturated Media Extraction

In this method a portion of the sample, as collected by the grower, is saturated with distilled water and allowed to equilibrate. The resulting solution is drawn off as the saturation extract. The available soluble plant nutrients in the sample are then analyzed and reported in the Media Report.

For convenience, a reference of the normal range of the nutrients is also shown on the report based on over 31,000 samples analyzed. Below is an explanation of the different test elements.

pH

In general, the target pH range will be crop dependent. Acidity, which is indicated by pH, determines nutrient availability so having a pH outside of the recommended range means you may have either too much of a certain nutrient (toxicity) or not enough of a nutrient available, depending on the pH and the nutrient in question. Lime can be added to raise pH – to reduce pH, a combination of nitrogen and sulfur are added.

Soluble Salts

The most common soluble salts in media come from commercial fertilizers, animal manure, organic matter, and compost. The salts usually found in growing media are forms of calcium, magnesium and sodium, in combination with chloride, sulfate and bicarbonate. Exposure to high soluble salt concentrations for a long period can cause injury to roots and, or, leaf margin burning. To reduce the amount of salt in the root zone you may need to adjust the amount and schedule of fertilizer applications. It may also be necessary to saturate the media with water to try to flush some of the salts from the root zone. Monitoring soluble salts can help with over fertilizing (unnecessary costs) as well as groundwater contamination due to leaching.

Soluble salt is measured as Electrical Conductivity (EC). This part of the test measures the concentration of soluble salts in the growing media by measuring the ability of the solution to conduct an electrical current. As the salt level increases the solution becomes a better conductor of electricity therefore, the EC increases.

Nutrients

The nutrients identified as essential for plant growth are listed in the top section of the report. This is used to determine the nutrients contained in the substrate that will become available for plant uptake. If your results are outside of the normal range, it does not necessarily mean you have an issue. However, it is certainly a good place to start looking.

N-P-K Fertilizer Values

The fertilizer values are the amount of total nutrients that the material contains. These values represent nutrients that are in the solution and readily available as well as nutrients that will become available over time as the material breaks down.

Total Nitrogen % - the sum of Organic Nitrogen and ammonium

Total P (as P2O5) % - The total amount of phosphorus as P2O5

Total K (as K2O) % - The total amount of potassium as K2O

Compost Maturity

Compost Maturity is used in determining if the compost material is stable enough for use in nurseries. It gives you an idea of how decomposed the raw material has become by measuring the amount of carbon, ammonia and respiration going on in the compost. If the compost is deemed unstable it will use nitrogen from the media or soil. This can cause a nitrogen deficiency for the desired crops and inhibit plant growth. Stable compost delivers nutrients slowly to the media or soil, providing valuable nutrients to the growing plants.

C/N Ratio

Measures the availability of the two most important nutrients for microorganisms in the soil. Carbon is used as an energy source and nitrogen is a requirement for building proteins and enzymes. This ratio is used as the first step in determining whether a sample is mature enough to be used as a soil amendment. An adequate ratio is equal to or less than 25:1.

Total Carbon % (AS)

Used in determining the C/N Ratio. Carbon is used as an energy source by microorganisms. Reported on an as received (AS) basis.

Total Nitrogen % (AS)

Used in determining the C/N Ratio. This value includes the organic forms of nitrogen found in soluble organic matter, proteins, and other by-products of decomposition as well as inorganic ammonium nitrogen. These soluble forms of nitrogen are easily leached from the soil with water movement or can be converted to gas if the soil is saturated with water. Reported on an as received (AS) basis.

Organic Matter % (DB)

Organic Matter is broken down as an important nutrient supply source for crops. The two main nutrients coming from organic matter are nitrogen and sulfur. As soil microbes break down OM it supplies the plant with these and other nutrients. This release is dependent on several factors such as the OM composition, temperature, moisture and management factors. OM is calculated using the Loss on Ignition method and reported on an as received (AS) basis.

Respiration %

Respiration percentage is used to determine maturity of the compost by measuring carbon dioxide released from a moist sample under controlled incubation conditions.

Test Your Water

You should also submit a water sample if you aren't sure of your water quality. pH, EC, alkalinity, and nutrients levels can all affect media differently so it's important to have a starting point on how this is going to affect your final growing media.