

Soil Health Testing

VAS Laboratories' Soil Health Assessment combines the chemical and physical results of traditional soil testing with biological assessments of microbial activity to provide a measure of the quality of the soil.

Higher Score = Healthier Soil

Improving soil health is a long-term process that will build up the ability of the soil to sustain crops from season to season and year to year. Increasing organic matter improves structure and nutrient cycling because of greater microbial activity. Improved structure helps to retain plant available water for longer periods between rains. Both of these will benefit crops by mitigating against variability of water and nutrient supply during the growing season. That could impact profits through reduced fertilizer inputs or better growth during hot summer weather.

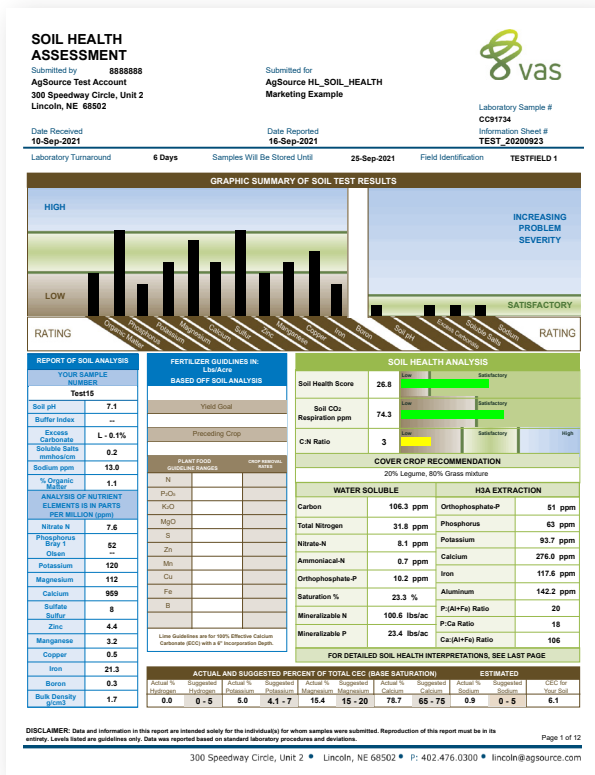
Organic matter in soil serves as a *revolving nutrient source* and as a means to improve soil structure, maintain tilth, and minimize erosion. Good news! The same practices reduce soil erosion and increase soil cover also help – slowly and over time – to increase organic matter and soil health.



Practices to boost soil health:

- Adjust pH level – 6.5-7.0 is best for soil life and most crops
- Maintain fertility – Fertilizers will generally increase soil organic matter because the increased crop growth returns larger amounts of residue to the soil.
- Crop rotations with more crop diversity, double cropping, small grains or perennial forage.
- Establish cover crops in the fall
- Less frequent tillage (no-till, strip till, ridge till) – The cultivation of virgin soils has generally resulted in a decline in organic matter of 30 to 50 percent. Can you do with one less pass?
- Applications of manure/compost
- Rotational or prescribed grazing

Once you change practices to enhance soil organic matter, a series of soil changes and environmental benefits follow. Track soil health changes over time with a soil health test each year at the same time of the year.



- **Chemical** – The qualities of the soil considered as chemical characteristics are already familiar to us through soil tests provided by laboratory services. Typical soil test results include pH, phosphorus, potassium and organic matter. Testing also looks for other nutrients necessary for plant production, such as nitrogen, sulfur and zinc. Recommendations for fertilizer or lime applications are based on the measurable levels of these factors.

Soil Health Test Packages

Every Soil Health test includes a complete soil nutrient analysis, which analyzes for Soil pH, Buffer pH, Excess Carbonate, Soluble Salt, Organic Matter, Phosphorus, Potassium, Magnesium, Calcium, Sodium, Nitrate, Sulfur, Zinc, Manganese, Copper, Iron, Boron, Calculated CEC and % of Base Saturation.

AgSource offers three Soil Health packages:

- **Basic** – includes: Soil Health Score, Soil CO₂ Respiration and C:N Ratio.
- **Routine** – includes: Soil Health Score, Soil CO₂ Respiration and C:N Ratio, in addition to Water Soluble analysis for Carbon, Total Nitrogen, Nitrate-N, Ammoniacal-N, Orthophosphate-P, and Water Saturation %.
- **Complete** – includes: Soil Health Score, Soil CO₂ Respiration and C:N Ratio, in addition to Water Soluble analysis includes: Carbon, Total Nitrogen, Nitrate-N, Ammoniacal-N, Orthophosphate-P, and Water Saturation %, and also the Haney H3A Extraction, which includes: Orthophosphate-P, Phosphorus, Potassium, Calcium, Iron and Aluminum.

Three Components of Soil Health

- **Biological** – Biological characteristics of the soil are a function of the size and diversity of the microbiological population. It is estimated in one gram of soil (enough to fit on top of a nickel) there are one billion living organisms, consisting of roughly ten thousand species. Most of those are single-celled bacteria but the population is very diverse. The rate of biological decomposition of plant residue and organic material influences the chemical and physical properties of the soil.
- **Physical** – The physical characteristics of soil include the size and distribution of the mineral particles in combinations of sand, silt and clay. How these soil particles are held together determines ability of a soil to absorb and release water and provide aeration for plant roots. Increasing the soil organic matter content by one percent adds one acre inch of available water retention, which can have a huge impact when the weather turns dry and hot.

To get started improving your soil's health, reach out to a VAS Laboratories representative.

vas.com | 402.476.0300

