



# Soil Health Assessment Center

## Soil Health Checkup

The University of Missouri Soil Health Laboratory is responding to the growing interest in quantifying soil health or soil quality. Estimation of soil fertility and the addition of chemical fertilizers has not proven sufficient to maintain all vital soil functions.

A healthy soil *functions* to:

- 1) produce biomass (food, fiber, energy),
- 2) infiltrate and store water en route to plants and aquifers,
- 3) accumulate organic matter,
- 4) store and release nutrients for plants and microorganisms that drive other soil functions.

Healthy soils have a stable surface, take in water, and increase or maintain organic matter to sustain life as we know it. Managing for healthy soils provides economic benefits for land managers, conserves the valuable soil resource for future generations, and promotes a healthy environment.

The MU Soil Health Laboratory performs analyses to measure key indicators of soil health just as physicians measure body temperature and blood pressure to evaluate human health. Water and nutrients are the “life blood” of soils. Key soil health indicators include:

**Potentially mineralizable nitrogen** estimates the amount of nitrogen that will be released through the growing season as soil organic matter is broken down. This estimate allows growers to reduce nitrogen purchases for their next crop because they know the amount the soil will provide.

**Soil pH** estimation can assist growers in selecting crops to suit the soil pH or amending their soil pH to the crops they want to grow. Optimum pH allows maximum nutrients to be available to crops. Without the proper pH many nutrient additions are wasted because they remain unavailable to plants.

**Wet aggregate stability** and **bulk density** affect plant root development, indicate how well water will infiltrate the soil and indicate how well the soil will hold the water that enters. The amount of water available to plants during drought can make a large difference in crop yield. Good soil structure can also allow farm implements to travel at planting or harvest times when adjacent soils with poor structure are unmanageable due to wetness.

**Active carbon** estimates the portion of soil organic carbon that is actively being broken down and transformed by soil organisms releasing nutrients.

**Phospholipid fatty acid analysis** estimates the mass of soil microorganisms and groups of microorganisms in soil, which are indicators of important, sustainable soil functions.

A soil health check up, in addition to a soil fertility test, allows land managers to assess their current management, determine their required inputs, and plan strategies for soil health improvements.

### For more information contact:

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