

# What Soil Health Tests Really Tell You

Despite challenges with consistency and repeatability, soil health testing is worthwhile

Someday you might be able to mark a spot in a field, return to it year after year and measure your progress improving soil health. After studying the state of soil health testing for four years, Farm Journal Field Agronomist Ken Ferrie has concluded such precise measurements are not yet available.

“However, that doesn’t mean it’s not well worth your time to conduct soil health analyses in the field and in laboratories,” Ferrie says. “It just means you have to understand what the tests can tell you and what they can’t.”

With new tests being developed and new labs offering soil health analyses, the science of soil health testing might be where conventional soil testing was many years ago.

“With traditional soil testing, we understand labs use different extraction methods,” Ferrie says. “Some labs report their results in pounds per acre, some in parts per million

and some in the elemental form of nutrients. We know soil samples should be collected the same time every year or adjusted accordingly. If we use the same lab and collection procedure, soil test results are



repeatable from year to year, and we can see trends over many years.”

The soil test on which you base lime and fertilizer applications is one aspect of soil health testing. It analyzes the chemical component and then you, or your consultant, apply knowledge to interpret the results.

Eventually, Ferrie believes we might develop the same kind of repeatability for the other two components of soil health—physical and biological. But we’re not there yet.

**Ferrie obtained soil health information by conducting in-field and lab tests.** Using GPS, technicians went to the same field location several times. They collected soil samples and conducted in-field tests to check for consistency of results over time.

The technicians used a soil penetrometer to analyze surface and subsurface hardness. They measured bulk density, water infiltration rates and carbon dioxide respiration, which indicates how many living organisms are present in the soil. They also conducted a slake test to measure the soil’s ability to prevent crusting.

Soil samples were collected using identical procedures, then sent to several labs. The labs conducted physical health tests, such as aggregate stability and water-holding capacity. They measured chemical aspects of soil health, such as H3A phosphorus and potassium (H3A is a weak organic acid that

## Some Labs Produced More Consistent Results

In this soil respiration test, involving soil samples collected within 10’ of each other at the same time on three sites, Lab C produced almost identical results for each of the matching samples. But Lab A produced inconsistent results. That inconsistency might indicate a lack of standardization of procedures in Lab A.

