

indicates nutrients in the soil solution), water-extractable organic nitrogen, organic carbon and the amount of carbon dioxide released in a 24-hour period. They also measured biological aspects, such as microbial diversity.

In another aspect of the study, Ferrie sent two technicians to multiple soil health test sites. Using the same procedures 10' to 15' apart, they collected duplicate samples, which were sent to the labs to check for consistency within each lab.

In the field and in the lab, Ferrie found consistency and repeatability issues, though some tests were more consistent and repeatable than other tests.

In the field, Ferrie found if technicians used identical testing procedures at the same time, the results for water infiltration rate, subsurface hardness and bulk density



Conduct in-field soil tests or collect samples at the same time each year, and note environmental changes.

were consistent, even when different technicians conducted the tests. However, not all of the results were repeat-

able from month to month or year to year.

"Subsurface hardness tests resulted in different numbers but identified the same dense layers from one year to the next," Ferrie explains. "The bulk density tests were repeatable from one year to the next. But water infiltration rate, carbon dioxide readings (even when standardized based on temperature, moisture and bulk density) and the slake test showed a lot of variability.

"For the most part, basic soil testing, organic matter content, aggregate stability and water-holding capacity were fairly repeatable from year to year within the same lab," he adds. "Getting most other readings in a tight enough range to be comfortable was harder."

One obstacle to obtaining repeatable results from year to year is the influence of seasonal weather patterns. For example, even though all of Ferrie's soil samples were taken

Consistent Lab Results

Like in-field soil health tests, some lab analyses produced consistent results during two years of studies involving seven sites, while others varied more. This lab produced consistent results for available water capacity and aggregate stability.

2013
2014

