



NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION ACTIVITY

SOIL TESTING

CODE 216

(ea)

DEFINITION

Quantitative analysis of the physical, biological, or chemical characteristics of soil using approved laboratory methods. Soil test results are used in conservation practice implementation to address the resource concern.

PURPOSE

Design the installation of planned soil health practices based on results from a soil health test.

CONDITIONS WHERE PRACTICE APPLIES

Cropland, pasture, and developed land.

CRITERIA

Collect soil and analyze appropriate soil health indicators based on the resource concern and planning objective.

Test soil for indicators referenced in Soil Health Technical Note No. 450-03, Recommended Soil Health Indicators and Associated Laboratory Procedures. Use all 5 of the following indicators/methods below unless there is State guidance for the use of just a single indicator recommended in Tech Note 450-03.

- Soil organic carbon content measured by dry combustion
- Wet macro-aggregate stability measured using ARS or NRCS methods or by sprinkle infiltrometer.
- Respiration using a 4-day incubation
- Active carbon measured by permanganate oxidation
- Bioavailable nitrogen measured as citrate extractable protein

Conduct a complete chemical soil test if the soil was not tested for macro- **and** micronutrients in the last two years. The comprehensive test includes:

- pH, electroconductivity (EC), phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, and zinc

Collect soil in the same locations where in-field assessments were already completed.

CONSIDERATIONS

Test for additional analytes as part of the comprehensive chemical test, such as nitrate-nitrogen, total nitrogen, boron, or molybdenum.

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State office](#) or visit the [Field Office Technical Guide](#).
USDA is an equal opportunity provider, employer, and lender.

NRCS, NHCP
September 2020

PLANS AND SPECIFICATIONS

Plans and specifications for soil testing shall be consistent with this standard and the referenced technical notes.

Soil testing records include:

- Aerial imagery with sampling locations
- Sample ID, GPS data, and other sampling observations
- Laboratory test results
- Implementation requirements for planned practices
- Schedule of additional testing or monitoring at recommended frequency
- Other records as required

OPERATION AND MAINTENANCE

Retesting for soil health indicators is recommended at least every 3 years during management transition periods and at least every 5 years once all new management practices have stabilized, or more frequently if management is significantly changed.

REFERENCES

USDA Natural Resources Conservation Service. 2019. Soil Health Technical Note No. 450-03. Recommended Soil Health Indicators and Associated Laboratory Procedures. <https://go.usa.gov/xpxqQ>

USDA Natural Resources Conservation Service. 2019. Soil Health Technical Note No. 450-04. The Basics of Addressing Resource Concerns with Conservation Practices within Integrated Soil Health Management Systems on Cropland. In Press. Found in Directives at Technical Notes, Title 450 - Technology.

USDA Natural Resources Conservation Service. 2014. Kellogg Soil Survey Laboratory Methods Manual. Soil Survey Investigations Report No. 42. Version 5.0.