AGRONOMY

CEMA 216 RESULTS INTERPRETATION GUIDE



This bulletin explains how to read the CEMA 216 Soil Health Assessment report. Page 1 walks the report top to bottom so you know what every field means and where the numbers come from. Page 2 explains all seven CEMA 216 core measurements, what makes them move, and how to judge whether a value is low, moderate, or high. Every column on the report is one submitted sample. Compare columns to each other before comparing to any published range. Because these samples were pulled within one field, sampled the same day to the same depth, the differences between columns are a real management signal.

CEMA 216 Soil Health Assessment

AgSource LABORATORIES

Submitted by 5400012
Example Crop Consulting Inc
123 Sample Rd
Example, WI 54900

Submitted for
EXAMPLE PRODUCER

Laboratory Sample #
DL00001 - DL00005

Date Sampled	Date Shipped	Date Received	Date Reported	Information Sheet #
04/13/2026	4-14-26	4-16-26	4-24-26	00000

1 Field ID EX01

Qualified Investigator JORDAN EXAMPLE
123 SAMPLE RD EXAMPLE WI 54900
EXAMPLE@EXAMPLE.COM
555.555.5555

Farm Name EXAMPLE FARM

NRCS Contract # EX0000001

2 Sample #	1	2	3	4	5
Your Sample ID	1	2	3	4	5
Sample Depth, in.	6	6	6	6	6
3 Previous Crop	Soybeans	Soybeans	Soybeans	Soybeans	Soybeans
Current Crop	Corn	Corn	Corn	Corn	Corn
Soil pH, 1:1 water	6.0	6.1	6.2	5.8	6.0
4 Texture, Class Name (hydrometer)	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam
Sand, %	55.0	56.0	54.0	57.0	55.0
Silt, %	31.0	30.0	32.0	29.0	31.0
Clay, %	14.0	14.0	14.0	14.0	14.0
Soil Organic Carbon, % (dry combustion)	1.42	1.58	1.65	1.28	1.50
Soil Respiration, mg C/kg soil/day (24 hour incubation)	70	75	79	62	73
5 Labile Carbon, mg C/kg soil (water extractable WEOC)	92.1	98.0	101.5	81.0	95.0
Bioavailable Nitrogen, mg N/kg soil (water extrctable WEON)	6.5	7.0	7.4	5.7	6.8
Wet Aggregate Stability, index (image analysis)	0.47	0.55	0.59	0.39	0.50

AgSource Laboratories maintains certification with the NAPT PAP program.

1. **Field ID, Qualified Investigator, Farm Name, NRCS Contract #.** One report covers one field. The QI block and contract number are what tie the results to the conservation contract.
2. **Sample # header row.** Each numbered column is one sample from that field. Up to five per submittal form and subsequent report.
3. **Sample context.** Your sample ID, depth in inches, previous crop, current crop. Depth matters: shallower samples read higher on every biological measure, so only compare samples pulled to the same depth.
4. **Soil pH and texture.** Both are CEMA 216 core requirements. Texture is a slow-changing property that will not shift with management practices. Soil pH is a key factor in nutrient uptake and can read differently with soil moisture at sampling, so interpret it alongside sampling conditions.
5. **The five biological and physical measurements.** Soil Organic Carbon, Soil Respiration, Labile Carbon, Bioavailable Nitrogen, and Wet Aggregate Stability. With pH and texture above, these complete the seven CEMA 216 core requirements. Texture sets the expectation for all five. Sandy soils carry less carbon and respire less than clay soils under identical management. Each is explained on page 2.

WHAT EACH MEASUREMENT TELLS YOU

Soil pH, 1:1 water

Acidity of the soil, measured in water. pH controls nutrient availability and how comfortable soil microbes are. Below 5.5, aluminum toxicity and poor nodulation limit both crop and microbial performance; above 7.8, phosphorus, iron, and zinc tie up. pH is the cheapest fix on the report and it impacts every other number.

Acidic	Target	Alkaline
<5.5	**5.5–7.5**	>7.8

Soil Organic Carbon, %

(dry combustion)

Total carbon held in soil organic matter. This is the long-term storage account. It moves slowly, on the order of tenths of a percent over several years, so treat it as a trend line, not a season-to-season scorecard. Rising SOC means residue and roots are being added faster than they are burned off. Multiply by roughly 1.72 for organic matter equivalent.

Low	Med	High
<1.0	1.0–2.0	>2.0

Labile Carbon, mg C/kg soil

(water extractable, WEOC)

The fraction of soil carbon that dissolves in water, the food microbes can utilize. Where organic carbon is the savings account, labile carbon is cash on hand. It rises with living roots and fresh residue and falls under fallow or intensive tillage, and it is the supply that drives the respiration number above.

Low	Med	High
<100	100–200	>200

Wet Aggregate Stability, index

(image analysis)

Soil aggregates are wetted and the share that holds together is measured, reported from 0 to 1. This is the physical payoff of biology: fungal hyphae and microbial glues bind particles into stable crumbs. High stability means water infiltrates instead of running off, crusting is reduced, and roots move freely. It responds to residue cover and to anything that stops tillage from breaking aggregates apart.

Low	Med	High
<0.40	0.40–0.70	>0.70

Texture — sand, silt, clay %

Determined by hydrometer and reported as a class name plus the three percentages. Texture is a CEMA 216 core requirement, but it is not a soil health score and does not change with management, it is the baseline you can interpret everything else against. A sandy loam at 1.4% organic carbon may be performing as well as a silty clay loam at 2.4%. Use texture to set realistic targets field by field, and to explain why two fields under the same program read differently.

> No low/high rating. Compare only within the same texture class.

Soil Respiration, mg C/kg soil/day

(24 hr)

A dried sample is rewetted and sealed for 24 hours; the CO_2 released measures how much living, active biology the soil holds. This is the most responsive number on the report. Cover crops, manure, and reduced tillage show up here first, often within one or two seasons, well before organic carbon moves.

Low	Med	High
0–60	61–150	151–300

Bioavailable Nitrogen, mg N/kg soil

(WEON)

Water extractable organic nitrogen. The N held in soluble organic form that microbes mineralize into plant-available nitrate and ammonium. Unlike a nitrate test, it is not knocked around by recent fertilizer, so it reads the soil's own capacity to supply N. Read it alongside labile carbon: a desired organic C:N ratio sits between 8 and 17, and a wide ratio means microbes will tie up N before the crop sees it.

Low	Med	High
<7	7–15	>15

Reading the report as a whole

- Start with pH and texture. They explain most differences between fields before management does.
- Respiration and labile carbon move first. Expect them to respond within a season or two of a practice change.
- Organic carbon and aggregate stability move last. Judge them over three to five years of the same sampling protocol.
- Sample the same spots, the same depth, the same time of year and in the same cropping sequence. Consistency matters more than management to the absolute value of any single result.
- Weigh the weather when comparing year over year. A wet spring, a drought, or a late freeze moves the biological numbers on its own, independent of management.

Interpretation bands are general guidelines for comparison, not pass/fail thresholds. Ranges follow AgSource published soil health interpretations and regional guidelines. Always confirm against local data before advising on a contract.