

Interpreting Soil Health Report

Demo Project Summary

A single 60 acre parcel in Newell, IA. Baseline management, 2000-2021, consisted of conventional corn-soybean management with intensive tillage (corn) and reduced tillage (soybean). Scenario management remained identical to baseline management with the exception of all tillage transitioning to a no till planter in 2022.

Cropland, Pasture, Range, Orchards/Vineyards

Select Field and Scenarios

Select a Field (F1)

Select a field from the dropdown to display soil health data for potential future scenarios

F1

Select Scenarios

Select and order the list of scenarios you would like to compare

no till

Step 1: Select a field from the dropdown menu

Step 2: Select and order up to 3 scenarios to view at a time



Soil Information

Step 3: Review the soil characteristics in each soil map unit occurring within a field. Values derived from the USDA-NRCS Soil Survey Geographic Database (SSURGO).

Soil information is derived from the USDA-NRCS Soil Survey Geographic Database (SSURGO). COMET-Farm currently uses the soil characteristics from the dominant component (i.e., soil series) in each soil map unit occurring within a field. Values shown here are for the dominant component only. For more information, see the COMET-Farm documentation on sampling and lab analyses.

Map Unit Symbol	Percent Area of Field	Dominant Component	Soil Texture Class	Sand/ Silt/ Clay (%)	Slope (%)	pH	Bulk Density (g cm-3)	Drainage Class	Taxonomic Classification
138B	0.3	Clarion	Loam	41/34/25	3	6.2	1.38	Moderately well drained	Fine-loamy_mixed_superactive_mesic Oxyaquic Hapludolls
138C2	0.3	Clarion	Sandy loam	46/33/21	8	6.2	1.41	Well drained	Fine-loamy_mixed_superactive_mesic Typic Hapludolls
507	0.2	Canisteo	Silty clay loam	30/38/32	1	7.5	1.32	Poorly drained	Fine-loamy_mixed_superactive_calcareous_mesic Typic Endoaquolls
55	0.1	Nicollet	Loam	31/39/30	2	6.2	1.33	Somewhat poorly drained	Fine-loamy_mixed_superactive_mesic Aquic Hapludolls
107	0.1	Webster	Clay loam	25/42/33				Well drained	Fine-loamy_mixed_superactive_mesic Typic Endoaquolls
390	0.1	Waldorf	Silt loam	7/54/39				Well drained	Fine_smectitic_mesic Vertic Endoaquolls

Step 4: Make sure report is toggled to Soil Health Metrics tab to view. Users can go back and forth between soil health and emissions reporting.

Soil Health Metrics

Emissions

All values are summarized as averages over the ten-year scenario period. Improvements are assessed based on whether each value reflects healthier soils. Some improvements are indicated by negative values, while others are indicated by positive values. The color key below highlights these changes: blue represents an improvement in soil health, and red represents a decline.

Soil Health Key

- Soil Health Improvement
- Soil Health Decline
- Soil Health Minimal Change +/- 2%

Step 5: Review the Soil Health Key. Values shown in blue - regardless of positive or negative - indicate a soil health improvement. Values shown in red - regardless of positive or negative - indicate a soil health decline. Minimal changes (less than 2%) are indicated with an arrow.

Units: Metric English

Optional: Toggle between Metric and English units

Soil Organic Carbon Metrics

Soil Carbon Percentage (C%)

Soil Carbon Percentage is presented as the value for the last year in the 10-year period. For example, if the baseline period is 2026-2036, the value presented here is the soil carbon percentage in 2036.

Soil Organic Carbon Metrics			
Baseline	no till		Percent Change vs Baseline
	10 yr Change	10 yr Change	
Soil Carbon Percentage (C%)	1.23	1.32	7%
Clarion 138B	1.09	1.17	7%
Clarion 138C2	0.95	1.02	8%
Canisteo 507	1.39	1.48	6%
Nicollet 55	1.35	1.43	6%

Organic carbon (the main element in soil organic matter) is an important indicator of soil quality, and helps to regulate nutrient supply, microbial activity, and soil moisture content. This metric compares the projected amount of soil organic carbon for the baseline and alternative management scenarios. Higher soil carbon is linked to healthier, more resilient soils and improved long-term productivity.

Interpreting Soil Health Report Continued...

Nitrogen Metrics

no till

Percent Change vs Baseline

AWHC

Baseline

no till

Percent Change vs Baseline

1

PDF overview

2

Soil info .csv

3

Detailed .csv

Nitrogen Leaching
(lb N / ac / yr)

Nitrogen Volatilization
(lb N / ac / yr)

System Nitrogen Use Efficiency

Partial Nutrient Balance

38.9

6.8

0.7

Partial Nutrient Balance

What it measures:
Harvested nitrogen in grain + straw relative to total nitrogen inputs to the system

- Values close to 1 indicate the nitrogen inputs were well-matched to crop demands
- Values less than 1 indicate a nitrogen surplus (e.g., over-fertilization)
- Values greater than 1 indicate the potential mining of nitrogen from soil organic matter

Reference: Nitrogen Use Efficiency: Statewide NUE benchmarking for corn grain and silage

Click the ⓘ button to learn more about each soil health metric.

As outlined above in the Soil Health Key, values shown in blue - regardless of positive or negative - indicate a soil health improvement. Values shown in red - regardless of positive or negative - indicate a soil health decline. Minimal changes (less than 2%) are indicated with an arrow.

-14%

→ 0%

4%

-5%

sNUE and PNB are presented as index values where soil is "healthier" if it's closer to 1

Available Water Holding Capacity (AWHC)

no till

Percent Change vs Baseline

AWHC

Baseline

no till

Percent Change vs Baseline

1

PDF overview

2

Soil info .csv

3

Detailed .csv

Report Options

USDA

1

PDF overview

COLORADO STATE UNIVERSITY

COMET-Farm Soil Health Metrics Report

User: Comet Farm

Project Name: Croplands Demo Project

Field Name: F1

Date: Tuesday, July 7, 2026 at 2:56 PM

Version: 5.0-Developmentbuild 4.1.9683.34742

Metric

Baseline

no till

no till - % Change vs Baseline

Carbon

Soil Carbon Percentage (C%)

1.23

1.32

7%

Nitrogen

Nitrogen Leaching (lb N / ac / yr)

38.86

33.57

-14%

Nitrogen

Nitrogen Volatilization (lb N / ac / yr)

6.84

6.85

→ 0%

Nitrogen

System Nitrogen Use Efficiency

0.70

0.73

4%

Nitrogen

Partial Nutrient Balance

0.70

0.67

-5%

Export Project

Download Report

Interpret Report

'Download Report' locally downloads a zipped folder that, along with your emissions reports, will include 1) a PDF overview of the soil health report, 2) a .csv version of your soil health report (what you see on the user interface), and 3) a .csv version of a detailed soil health report that displays values by soil type and soil map unit.

Field Locat Field Name Map Unit Map Unit S P

117397 uppright 536697 WaA

117395 F1 403276 138B

117395 F1 403277 138C2

117395 F1 403308 507

117396 CieloCircle 403308 507

117395 F1 403310 55

117397 uppright 536698 WaB

117395 F1 403271 107

117395 F1 403301 390

117396 CieloCircle 403276 138B

117397 uppright 536671 MnC

117396 CieloCircle 403317 6

117397 uppright 536643 GnC

117396 CieloCircle 403310 55

117397 uppright 536619 CoE

recordType fieldId mapUnitSy units fieldName state fieldArea map_unit_scenarioN: soilArea scenarioI metric absoluteCl percentCh is

soilComp 117361 138B C% F1 IA 60.19622 403276 Baseline 16.58445 174450 soilCarbon 1.091658 0

soilComp 117361 138B lb N / ac / F1 IA 60.19622 403276 Baseline 16.58445 174450 nLeach 42.68115 0

soilComp 117361 138B lb N / ac / F1 IA 60.19622 403276 Baseline 16.58445 174450 nVol 6.788747 0

soilComp 117361 138B F1 IA 60.19622 403276 Baseline 16.58445 174450 sNUE 0.686066 0

soilComp 117361 138B F1 IA 60.19622 403276 Baseline 16.58445 174450 pnb 0.690491 0

soilComp 117361 138B gal / ac F1 IA 60.19622 403276 Baseline 16.58445 174450 awch 24157.51 0

soilComp 117361 138B C% F1 IA 60.19622 403276 no till 16.58445 174451 soilCarbon 1.172256 7

soilComp 117361 138B lb N / ac / F1 IA 60.19622 403276 no till 16.58445 174451 nLeach 36.95261 -13

soilComp 117361 138B lb N / ac / F1 IA 60.19622 403276 no till 16.58445 174451 nVol 6.78726 0

soilComp 117361 138B F1 IA 60.19622 403276 no till 16.58445 174451 sNUE 0.715697 4

soilComp 117361 138B F1 IA 60.19622 403276 no till 16.58445 174451 pnb 0.661846 -4

soilComp 117361 138B gal / ac F1 IA 60.19622 403276 no till 16.58445 174451 awch 24531.89 2

soilComp 117361 138C2 C% F1 IA 60.19622 403277 Baseline 15.00227 174450 soilCarbon 0.946443 0

soilComp 117361 138C2 lb N / ac / F1 IA 60.19622 403277 Baseline 15.00227 174450 nLeach 46.94651 0

soilComp 117361 138C2 lb N / ac / F1 IA 60.19622 403277 Baseline 15.00227 174450 sNUE 0.734472 0

soilComp 117361 138C2 F1 IA 60.19622 403277 Baseline 15.00227 174450 sNUE 0.668846 0

soilComp 117361 138C2 F1 IA 60.19622 403277 Baseline 15.00227 174450 pnb 0.674342 0

soilComp 117361 138C2 gal / ac F1 IA 60.19622 403277 Baseline 15.00227 174450 awch 24093.52 0

soilComp 117361 138C2 C% F1 IA 60.19622 403277 no till 15.00227 174451 soilCarbon 1.023737 8

NRCS

USDA

Colorado State University

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