

The New York State Soil Health Working Group

Major Soil Health Constraints Challenge New York Farmers

Farm productivity and sustainability in NY are limited by two major soil health constraints:

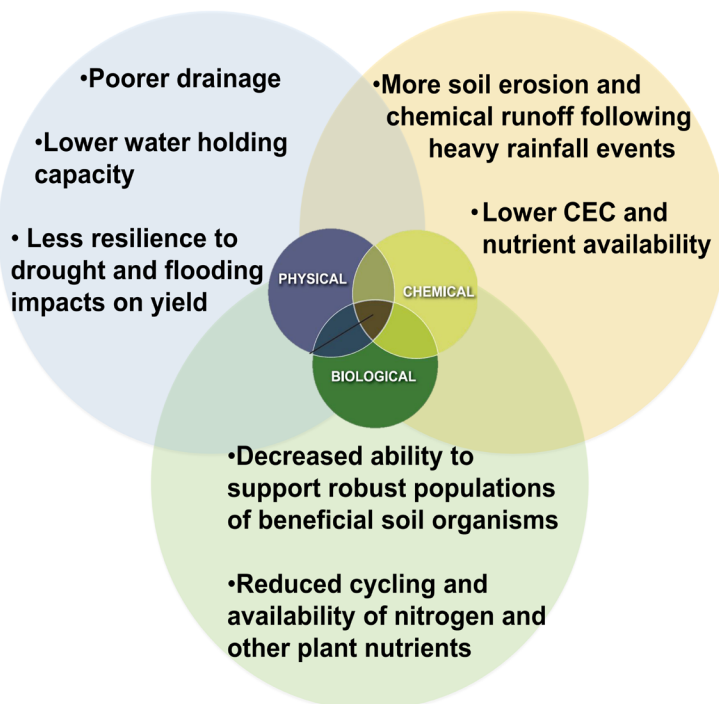
- Soil compaction
- Loss of organic matter

Managing our soils for soil health offers “win-win” solutions:

- Minimizing costs to build resilience to weather extremes
- Reducing the carbon footprint and nutrient losses from agriculture
- Suppression of weeds and disease, while promoting beneficial soil organisms



Typical Symptoms of Poor Soil Health



Soil constraints can severely impact crop productivity, farm sustainability, and environmental quality. Soil health can be measured through indicators and management practices can be adjusted to alleviate these problems.



Soil Health Efforts in New York

New York State remains a leader in the development and adoption of management practices for building healthy soils:

- New York State, in collaboration with the USDA-NRCS, has been at the forefront of the emerging concept of soil health
- A diverse range of interested stakeholders and practitioners implementing soil health practices and policies exists across the State
- Growing interest and evidence linking soil health and mitigation of extreme weather
- Cornell University was the first to develop a comprehensive assessment to measure biological and physical soil processes

Comprehensive Assessment of Soil Health
 From the Cornell Soil Health Laboratory, Department of Soil and Crop Sciences, School of Integrative Plant Science, Cornell University, Ithaca, NY 14853. <http://soilhealth.cals.cornell.edu>

Grower: Bob Schindelbeck, 306 Tower Rd., Ithaca, NY 14853
 Sample ID: LL8
 Field ID: Caldwell Field- intensive management
 Date Sampled: 03/11/2015
 Given Soil Type: Collamer silt loam
 Crops Grown: WHT/WHT/WHT
 Tillage: 7-9 inches

Agricultural Service Provider: Mr. Bob Consulting, rrs3@cornell.edu

Measured Soil Textural Class: **silt loam**
 Sand: 2% - Silt: 83% - Clay: 15%

Group	Indicator	Value	Rating	Constraints
physical	Available Water Capacity	0.14	37	
physical	Surface Hardness	260	12	Rooting, Water Transmission
physical	Subsurface Hardness	340	35	
physical	Aggregate Stability	15.7	19	Aeration, Infiltration, Rooting, Crusting, Sealing, Erosion, Runoff
biological	Organic Matter	2.5	28	
biological	ACE Soil Protein Index	5.1	25	
biological	Soil Respiration	0.5	40	
biological	Active Carbon	288	12	Energy Source for Soil Biota
chemical	Soil pH	6.5	100	
chemical	Extractable Phosphorus	20.0	100	
chemical	Extractable Potassium	150.6	100	
chemical	Minor Elements Mg: 131.0 / Fe: 1.2 / Mn: 12.9 / Zn: 0.3		100	

Overall Quality Score: **51 / Medium**

Cornell's Comprehensive Assessment of Soil Health (CASH) is a publicly available soil quality test that identifies major constraints and provides a framework to effective management planning.

The New York State Soil Health Initiative

A central hub for information and networking related to soil health in New York State

- Building on current strengths and momentum
- Coordinating and creating a Soil Health Network for information exchange, priority setting and identifying barriers and opportunities for facilitating farmer adoption of soil health practices
- Recruiting a network of farmer collaborators for sharing innovation and for monitoring and documenting soil health benefits
- Developing a “Road map” with a vision for NYS leadership in soil health that will build resilience to extreme weather events, protect our soil and water resources, and bolster farm viability
- Providing fresh outreach materials and supporting trainings, field days and soil health assessments on collaborating farms from all types of systems

Evaluating Novel Cropping System Diversification Strategies, Leveraging Long-term Studies

Demonstrating and evaluating various approaches to the integration of soil health practices into conventional farming systems for improving soil health, weed control and yield.

Field, fruit and vegetable cropping systems, in addition to perennial grains, are being examined.

Quantifying the Economic and Environmental Benefits and Identify Barriers to Adoption

Evaluating soil health economic benefits such as reducing input costs and capital investments, improved resiliency to extreme weather and new market opportunities.

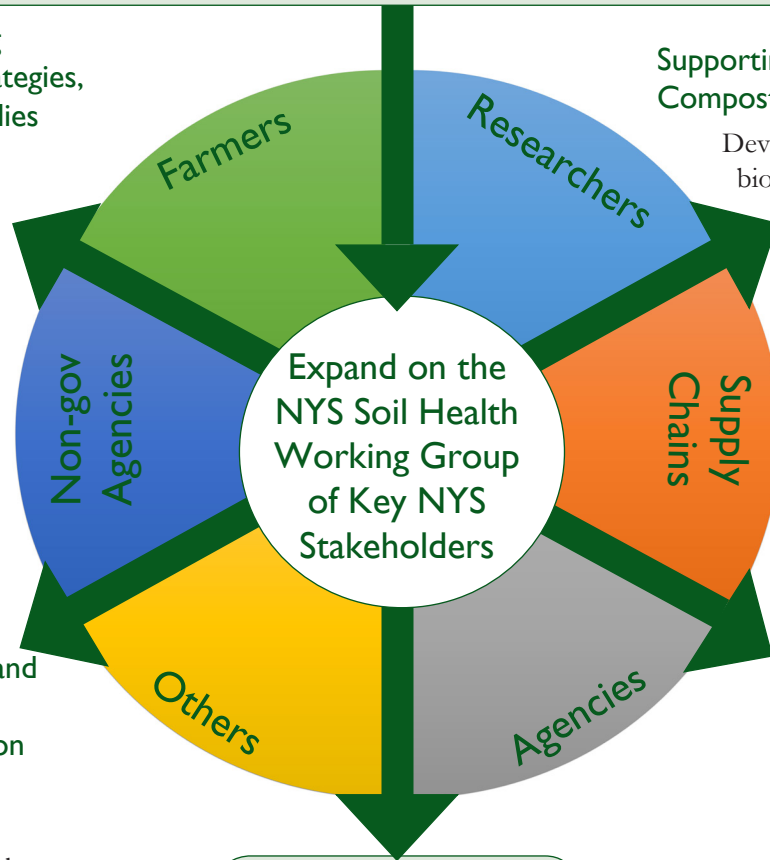
Environmental analyses will include factors such as reducing erosion and chemical runoff into waterways, reducing greenhouse gas emissions and increasing carbon sequestration.

Supporting Biochar and Compost Amendment Innovation

Developing new composts and biochar products from waste materials for improved soil health and fertility.

Developing a Soil Health “Road map” and Coordinating a NYS “Soil Health Summit”

Providing a vision for the future, the summit will include presentations and panels composed of farmers, researchers, government and non-government organization representatives, policy-makers and other stakeholders.



This broad network will facilitate information exchange, priority setting, identification of research and policy needs, and provide online resources, information and mechanisms for communication.

