SOIL HEALTH ORGANIZATIONS

The number of individuals, organizations, and projects focused on soil health in New York is expanding every year. Many of these contributed to the 2019 Roadmap report. The list below is not intended as a comprehensive inventory of all soil health efforts in the state. Additional details of some of the activities of these organizations are found in the Introduction/Background section of the Roadmap. We also have included at the end of this Appendix a few national soil health efforts, organizations, and state government activities beyond New York that have relevance.

Government Agencies

New York State Department of Agriculture and Markets (NYSDAM)
(https://www.agriculture.ny.gov/)

Much of NYSDAM's soil health-related work is implemented through the Agricultural and Environmental Management (AEM) framework (https://www.nys-soilandwater.org/aem/). The AEM framework has been in place for nearly two decades in New York and, with participation from a third of all farms in the state, has strong support in the agricultural community. Most (approximately 50) agricultural counties in New York conduct AEM programs, with the local Soil and Water Conservation District as the lead.

AEM provides incentives in the form of technical assistance and competitive cost-share funding to help farmers implement conservation plans and practices that can improve farm viability and environmental conservation. Such practices directly related to soil health include, but are not limited to, nutrient management, cover crops, conservation crop rotation, conservation tillage including no-till, prescribed grazing, composting, and buffers to name a few.

Specifically, the AEM Base Funding Program supports District efforts to work with farms through the AEM Tiers to assess, plan, implement, and evaluate soil health practice systems. The Agricultural Non-Point Source Abatement and Control Grant Program (www.nys-soilandwater.org/aem/nonpoint.html) is in its 25th year in 2019 and provides approximately $16 million of competitive, annual cost share funding through SWCDs to address water quality resource concerns, as well as other ecological services.

The Climate Resilient Farming Program (www.nys-soilandwater.org/programs/crf.html) through SWCDs is in its fourth year in 2019 and provides competitive cost-share funding to address multiple ecosystem services, including farm adaptation to climate change and/or greenhouse gas mitigation, as well as soil health, water quality, soil conservation, and farm resilience.

Given the variety of AEM projects encouraged within the Climate Resilient Farming Program, the roughly $2.5 million annual opportunity is offered across three separate tracks: manure storage cover and flare systems, water management systems, and one specifically focused on soil health systems. Through the Agricultural Non-Point Source Abatement and Control Grant Program (last 10 years) and Climate Resilient Farming Program (last 3 years), over 135,000 acres of soil health practice systems, including cover crops, conservation tillage, crop rotation, and contour farming, have been supported by $4 million in State cost share funds and $2.5 million in farmer contributions.

In addition to cost share opportunities from NYS, Districts collaborate with multiple stakeholders and pursue other local, State, and federal grants to deliver on significant soil health outreach and training events, touching thousands of farmers over the last several years.

SOIL HEALTH ORGANIZATIONS

New York State Department of Environmental Conservation (NYSDEC)
(http://www.dec.ny.gov/)

The NYSDEC intersects with soil health in multiple ways, particularly the agency's oversight of the Environmental Conservation Law (ECL), Clean Water Act (CWA), and the State Pollutant Discharge Elimination System (SPDES) permits for Concentrated Animal Feed Operations (CAFOs). New York has one of the most robust CAFO permitting programs in the nation with more than 500 CAFOs across the state, the majority of which are dairy farms with 300 or more cows and associated crop and livestock operations. Many of the NYSDEC activities related to soil health are in collaboration with NYSDAM, SWCDs, and other partners involved in soil, nutrient, water, crop, and animal management within the framework of the state's Agricultural Environmental Management (AEM) program. New York requires AEM Certified Planners to work with CAFO dairy farmers to develop Comprehensive Nutrient Management Plans (CNMP). AEM planning can include practices that promote soil health, such as use of cover crops, conservation crop rotations, organic matter additions through manure application, buffers, and conservation tillage.

USDA-Natural Resources Conservation Service (NRCS)
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/)

Among its many responsibilities, the NRCS provides technical and financial assistance to help farmers manage their soils, to improve soil function, productivity, and sustainability, while addressing air and water quality concerns.

In New York the NRCS field office staff provide direct assistance to agricultural producers to develop conservation plans. These plans evaluate alternatives to improve soil health and other on-farm resource concerns and provide guidance through conservation practice standards and specifications to implement the producer's objectives. NRCS administers several conservation financial assistance programs to help incentivize implementing conservation practices and soil health management systems.

With the increasing farmer, rancher, and landowner interest in soil health across the country, NRCS has responded by creating a nationally recognized soil health campaign, followed by the creation of the Soil Health Division (SHD) within the agency's structure in 2014. The SHD provides leadership for strategy, standards, tools, training, direct assistance, and policy related to soil health. NRCS has been collaborating with soil health experts within the public and private sectors to develop a set of current best available standard indicators and associated laboratory procedures to standardize soil health assessment.

The NRCS Big Flats Plant Materials Center in NY has conducted cover crop demonstration trials and an annual field day for more than ten years, fostering professional, academic and farmer soil health collaboration and networking. In 2013 the Northeast NRCS Soil Health Specialist, in cooperation with farmers, agribusiness, state agencies, Cornell University, SUNY Ag & Tech colleges and other stakeholders, organized the New York State Soil Health Workgroup (for more details see Appendix- Non-profit Organizations).

Since 2013 NRCS has awarded five Conservation Innovation Grants (CIG) for soil health projects in New York. These included support for: Cornell's work on the Comprehensive Assessment of Soil Health (CASH) protocol; Cornell's work to quantify and incorporate soil health lab indicator inputs into the Adapt-N tool for improved nitrogen management; a Delaware County cooperative extension cover

crop and soil health outreach project; and projects with the American Farmland Trust and the Upper Susquehanna Coalition supporting on farm demonstrations, workshops and farmer case studies.

USDA-Northeast Sustainable Agriculture Research and Education (NE SARE)
(https://www.nesare.org/)

NE SARE is a regional program of the nationwide SARE effort. SARE offers competitive grants for research and education projects that address key issues affecting the sustainability and economic viability of agriculture. NE SARE was one of the first funding agencies to recognize the strategic importance of soil health, and supported some of the first soil health projects in New York, which were organized by farmers, Cornell University and Cooperative Extension, and others in the early 1990s. SARE's support has continued, such as a 2016 partnership grant, spearheaded by the NYS Soil Health Workgroup, to develop state teams to organize demonstration and other outreach projects. Most recently, NE SARE has funded the New York "Advanced Soil Health Training for Ag Service Providers" curriculum project spearheaded by the American Farmland Trust.

Farmer Organizations

Northeast Organic Farming Association, New York chapter (NOFA-NY)
(https://www.nofany.org/)

Soil health is a top priority for organic farmers and for NOFA-NY. They operate under the premise that healthy soils produce healthy crops, and people and animals who eat these crops will be healthy. They collaborate with other chapters in the Northeast, with other non-profits such as Earth Justice (www.earthjustice.org), and most recently with New York Soil Health coordinated by Cornell University. For many years NOFA-NY has featured soil health at winter conferences, held farmer round-tables where farmers share their practices, questions, discoveries with one another, and organized field days on farms with outstanding practices.

NOFA-NY, in cooperation with the 6 other NOFA chapters in neighboring states, has been engaged in a multi-year project to identify farmers who are doing outstanding work in carbon farming and then to share those innovations with other farmers. The Fall 2007 issue of The Natural Farmer focused on climate change and soil health. The NOFA initiative includes an on-line discussion group for farmers, a data base of farmer practices, and a white paper – Soil Carbon Restoration: Can Biology do the Job? by Jack Kittredge.

Western New York Soil Health Alliance
(www.wnysoilhealth.com)

The Western New York Soil Health Alliance was incorporated in 2016 as a farmer led group to promote good soil health practices on farms. The Alliance envisions a future where farmers use soil health systems to reduce agriculture's negative impacts on the environment, while improving the long-term productivity of our soils, efficiency of local farming practices and profitability of our farming enterprises. It promotes and supports the successful application of good soil health practices through shared ideas, experience, education and new technology, working to ensure that the tradition and culture of farming in Western New York can be carried on to future generations. A key objective is to develop a farmer-to-farmer network to promote local farm trials and share the results to educate producers and the general public on the benefits of good soil health practices, while serving as a collective voice for

issues affecting soil health production practices for crop, dairy and livestock producers in Western New York.

Other Non-Profit Organizations

American Farmland Trust (AFT)
((https://www.farmland.org/our-work/where-we-work/new-york)

The American Farmland Trust launched in 2018 an "Advanced Soil Health Training for Ag Service Providers" curriculum in New York. This was funded by USDA-NE SARE and involves partnership with the Cornell University New York Soil Health program, the USDA-NRCS, and others. This multi-year training course will provide participants with the knowledge to understand the physical, biological and chemical characteristics of soil and the management systems that farmers can employ to improve soil health.

The first cadre of trainees (cover crop specialists, farm managers, agricultural retailers, crop consultants, etc.) have now completed the first two of five planned workshops. Training themes include the basic principles of soil health, cropping systems and cover crops, adaptive nutrient management for soil health, eliminating reducing or modifying tillage for soil health, and customizing soil health systems to the farm and farmer. Trainees will receive a certificate upon completion of advanced soil health training. This project is intended to be a pilot program and will be completed by the fall of 2020.

4R Nutrient Stewardship Program
(https://www.nysaba.com/4r-ny)

The "4Rs" refer to: right place, right source, right time and right rate for fertilizer applications. While this approach sounds straightforward, its implementation can be challenging under the complexity of real production environments. The 4R management strategy is closely linked with goals for improved soil health, crop resiliency, decreased environmental pollution, and protection of biodiversity. This approach considers economic, social and environmental dimensions of nutrient management and is essential to sustainability of agricultural systems.

The 4R Program is being adopted across North America, with measurable success. What is new about this program is the leadership from the fertilizer industry, in particular the Fertilizer Institute, and in New York the partnership with the non-profit New York State Agribusiness Association, as well as The Nature Conservancy, Cornell University, and others.

New York Farm Bureau (NYFB)
(https://www.nyfb.org/)

The NYFB is a non-profit organization that serves as the key liaison between the agricultural industry and New York policy-makers. The NYFB can provide unique expertise in identifying political actions to support farmer adoption of soil health practices. Also, the NYFB provides assistance in developing strategies to highlight the importance of soil health for a legislative audience, including communication with urban legislators unfamiliar with the benefits of soil health for agricultural sustainability and protection of natural resources.

SOIL HEALTH ORGANIZATIONS

New York Soil Health (NYSH)
(www.newyorksoilhealth.org)

The statewide New York Soil Health initiative, which began in 2017, has provided a communication and collaboration framework to encompass the full diversity of interests, events, resources, and priorities of the many stakeholder groups involved in the soil health movement. This Roadmap document is one product of the NYSH collaboration among stakeholders. NYSH is funded by the NYS Environment Protection Fund, administered by NYSDAM, and coordinated by CALS Cornell, the state's land-grant partner. It supports innovative research projects, as well as outreach efforts such as workshops, field days, and a website for communication and sharing of resources.

In July, 2018, NYSH organized the first statewide Soil Health Summit held in Albany. About 140 attended the event, with farmers, policy-makers, and over 35 organizations represented. It brought together for the first time the full swath of those working on soil health issues. There was sharing of interests and accomplishments of the various organizations, as well as a breakout session focused on gathering input on goals and priorities for this Roadmap document (for details see: www.newyorksoilhealth.org/summit).

New York State Soil Health Workgroup (NYSSHWG)

This Workgroup was assembled in 2013 and has been coordinated by the Northeast NRCS. It is made up of representatives from NRCS, SWCD, farmers, Ag & Markets, agriculture service providers, state government agencies, NGO's, SUNY Ag & Tech colleges, Cornell university educators and researchers, Cornell Cooperative Extension, and others. The Workgroup is the recognized advisory committee on soil health to the NRCS State Technical Committee, and meets approximately quarterly to identify statewide priorities and needs.

The Workgroup is actively involved in soil health workshops and field days at the local level to promote conservation tillage, cover cropping, grazing and nutrient management strategies. Since 2014 the Workgroup has planned and coordinated a three-day soil health program at Empire Farm Days, including presentations, cover crop field plantings for demonstration, and farmer panels. This Workgroup played an important role in the 2016 formation of the farmer-led Western New York Soil Health Alliance (for more details see Appendix- Farmer Organizations).

New York Farm Viability Institute (NYFVI)
(http://www.nyfvi.org/)

The New York Farm Viability Institute's mission supports applied research and education projects that will increase farm profitability and support the sustainability of New York farmers. This is achieved through a farmer-driven grant making process connecting farmer-identified needs to practical research and education solutions. NYFVI has funded and completed over 300 projects overall since 2005. During that time, the board approved funding for 45 projects that directly address soil health as part of the project's deliverables.

Over $4 million have been invested in soil health related projects since the inception of NYFVI. Data included in final reporting showed consistent positive impacts if applicable researched management practices were applied across the state agricultural industry. NYFVI board members understand the importance of healthy soil and will continue to fund projects that have a positive impact on soil health.

SOIL HEALTH ORGANIZATIONS

The linkages between soil health, food security and environmental quality are part of their decision making process.

The Nature Conservancy (TNC)
(https://www.nature.org/en-us/about-us/where-we-work/united-states/new-york/)

The Nature Conservancy (TNC) is a global conservation non-profit dedicated to conserving the lands and waters on which all life depends. Guided by science, TNC creates innovative, on-the-ground solutions to the world's greatest conservation challenges so that nature and people can thrive now and into the future. Agriculture and soil health are a global and regional priority for TNC.

In New York, TNC partnered with NYSABA (NYS Agribusiness Association) and the Fertilizer Institute to launch the 4R Nutrient Stewardship Certification Program. Outside NY, TNC has also partnered with others to promote the 4R Program in the western Lake Erie basin. As 4R certification and related practices spread in New York, water quality and soil health will improve, as will efficiencies on farms through the application of fertilizers at the right time, place, rate, and from the right source.

TNC also currently works with many partners and agricultural stakeholders in the Lake Champlain basin and the Finger Lakes region (with a plan to expand to all of New York state) to develop innovative programs that increase the adoption and effectiveness of conservation practices related to soil health.

The Conservancy's overall goals with each of these programs are to further increase the environmental and economic sustainability of farming in New York, with a parallel focus of promoting soil health practices that contribute to New York's carbon sequestration goals. TNC believes that these outcomes can be accomplished by better targeting the actions and benefits of existing programs, and through improved incentives for the ecosystem services that agriculture currently provides. TNC anticipates that improvements in these areas will yield significant benefits to water quality, food security, soil health and natural climate solutions throughout New York state.

Watershed Coalitions
(http://www.dec.ny.gov/lands/26561.html)

Over the last 25-plus years, several Watershed Coalitions comprised of Soil and Water Conservation Districts and other agencies have organized to protect, promote and enhance natural resources (including soil conservation) of New York's watershed regions through education, partnerships, planning and implementation. The regional coordinated approach of Watershed Coalitions in New York are nationally regarded as having an innovative, effective approach to build partnerships and advance conservation management, like soil health practices, on the ground. Their success comes from the strength of providing a network of technical experts with local tie-in to land owners while partnering with federal, state and local stakeholders. Much of this networking is facilitated by the New York Agricultural Environmental Management (AEM) framework.

SOIL HEALTH ORGANIZATIONS

New York Higher Education and Research Institutions

New York has many higher education and research institutions which are an important resource for soil health programming now and in the future. Cornell's College of Agriculture and Life Sciences (CALS) is the state's land grant university and has played a soil health leadership role at the state, national, and international levels since the 1990's. Cornell currently provides leadership for the statewide New York Soil Health stakeholder collaboration, and has also coordinated this New York Soil Health Roadmap effort.

In addition to Cornell, other universities within the state have faculty with interest and expertise relevant to soil health research, outreach, and/or policy, and educational programs in agricultural or environmental science or other relevant disciplines. This would include SUNY College of Environmental Science and Forestry (ESF), SUNY Cobleskill, SUNY Morrisville, SUNY Binghamton, Columbia University, the Cary Institute, and others.

Regional and National Soil Health Organizations and Activities Beyond New York

California Healthy Soils Initiative
(www.cdfa.ca.gov/healthysoils/)

California's Healthy Soils Initiative promotes practices that create healthy soils on the state's many acres of farm and ranchland. The program focuses on bolstering levels of organic matter in soils across the state to ensure the viability of California's agricultural economy, to sequester and store carbon in the soil as a climate change mitigation tactic, and to divert waste material high in organic matter from landfills. The Initiative is a collaboration between multiple state agencies and departments, providing financial assistance for implementation of soil health practices, promoting research and education efforts around soil health, and more.

Maryland Cover Crops Program and Healthy Soil Biomass Pilot Program
(https://mda.maryland.gov/resource_conservation/Pages/cover_crop.aspx)

The state of Maryland provides financial incentives to farmers to support the use of cover crops with the aim of improving soil health and reducing agricultural runoff into the Chesapeake Bay. A wide variety of cover crops can be planted in the late summer or autumn to over-winter until the following spring, and the program allows for flexible management options such as forage grazing. The Maryland Department of Agriculture also recently launched a separate, but similar, program called the Healthy Soil Biomass Pilot Program, which pays farmers to plant up to 500 acres of wheat, rye or triticale before December 1st, with the aim of accumulating soil carbon and biomass while further reducing runoff into water local waterbodies.

Pennsylvania Association for Sustainable Agriculture (PASA)
(https://pasafarming.org/)

Since 1992, this Pennsylvania-based association has supported farmers working for economically-just, environmentally regenerative, and community-focused food systems. PASA organizes an annual Sustainable Agriculture Conference, and operates a Soil Institute that advances sustainable farming. PASA works with a variety of stakeholders, organizes workshops and events, offers farmer training programs and supports research efforts.

SOIL HEALTH ORGANIZATIONS

Soil Health Institute
(www.soilhealthinstitute.org)

Independent and not-for-profit, the Soil Health Institute is a collaborative organization funded by the Noble Foundation and the Farm Foundation to "safeguard and enhance the vitality and productivity of soil through scientific research and advancement." The Soil Health Institute prioritizes fundamental and applied research, and works with a diverse group of stakeholders that includes farmers and ranchers, scientists, and consumers, to move knowledge from the laboratory to the farm field.

Recent accomplishments include the launch of the Soil Health Landscape Tool (an open-source information portal on soil health) and an Action Plan On Soil Health which outlines future goals and priorities to advance soil health. The organization is currently developing an inventory and evaluating various soil health indicators and assessment protocols for quantifying soil health (Cornell's soil health lab and CASH protocol are involved).

Soil Health Partnership
(https://www.soilhealthpartnership.org/)

This effort is led by the National Corn Growers Association and currently operates in 12 states of the Midwest. A major contribution has been soil health assessments (using Cornell's CASH protocol), and aggregation of data from over 100 commercial corn-soybean farms in the region to evaluate costs and benefits of innovative soil management. Data sharing, education, and farmer-to-farmer training are hallmarks of this multi-year effort. Key partners include: Cornell and four other universities, The Nature Conservancy, Environmental Defense Fund, USDA-ARS, USDA-NRCS, and Monsanto.

US Climate Alliance
(www.usclimatealliance.org/nwlchallenge)

New York State is one of more than a dozen states and territories to join the U.S. Climate Alliance; a coalition committed to addressing climate change and adhering to the goals of the 2015 Paris Agreement, which aims to reduce greenhouse gas emissions by 26-28% below 2005 levels by 2025. The group's Natural & Working Lands Initiative strives to increase carbon sequestration and storage across forests, farmland, ranchland, grasslands, wetlands, and urban lands, and partners with a wide range of NGOs do develop solutions and to spur action.

Source: New York Soil Health. (2019). New York Soil Health Roadmap. Retrieved from https://blogs.cornell.edu/soilhealthinitiative/files/2019/02/NYSH_roadmap_2019feb15_web-23n3qcx.pdf