



SOIL
RENAISSANCE

STRATEGIC PLAN



Join The Soil Renaissance

When the average person inventories humanity's most precious resources, soil rarely makes the list. Yet without soil there is no agriculture, no food supply, no foundation for a global economy. Soil is life.

Healthy soil is key to a vibrant agriculture, clean water and air, and provides a home to microorganisms that play a fundamental role in all ecosystems.

Regardless of where one lives in the world, the crops produced, the farming systems employed or the size and scale of farms, healthy soils are critical to sustainable and economically viable agriculture and food production.

Yet there remains a gap in the fundamental knowledge around soil and soil health. Given the limited supply of soil in the world, understanding its functions, protecting its existence and maintaining its vitality is paramount. Thus Farm Foundation, NFP and The Samuel Roberts Noble Foundation have launched a new movement to advance soil health: the Soil Renaissance.

The Soil Renaissance focuses on the role of soil health in vibrant, profitable and sustainable natural resource systems, as well as the critical importance of soil and soil health in meeting the challenge of feeding 9 billion people by 2050. The Soil Renaissance seeks to make soil health the cornerstone of land use management decisions.

Farm Foundation, NFP and The Samuel Roberts Noble Foundation are leading the Soil Renaissance, but collaboration will be the linchpin to its success. No single person or organization can fully address the diverse and complex issues of soil health across the nation and the world. Advancing soil health requires a sustained effort by all stakeholders.

The endeavor began in the fall 2013 when 25 soil health thought leaders, working in industry, academia, research, government agencies and production agriculture, came together at the Noble campus in Ardmore, OK, to talk about soil health. The Ardmore Group identified the four pillars around which the Soil Renaissance is built: economics, measurement, research and education/outreach.

Those thought leaders then enlisted other stakeholders (lists on page 12) to help create the Strategic Plan you will find detailed on the following pages. More information is available at www.soilrenaissance.org. It is important to note that the Strategic Plan is a starting point that will evolve as work is completed, new challenges are identified and more individuals and organizations join the Soil Renaissance. The Soil Renaissance will serve as a central hub through which interested parties can learn about work in progress, gaps to be filled and ways they can help.

Soil health is not a new topic, it has just been taken for granted. The Soil Renaissance will bring this issue back to the forefront and expand the knowledge that will help sustain earth's most valuable resource. Please, join us in this effort and pledge your support for the Soil Renaissance today.

Neil Conklin
Farm Foundation, NFP

William Buckner
The Samuel Roberts Noble Foundation



The Soil Renaissance: *Knowledge to sustain earth's most valuable asset*

Definition of Soil Health:

The continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals and humans.

The Vision:

Improving soil health is the cornerstone of land use management decisions.

The Mission:

The Soil Renaissance reawakens the public to the importance of soil health for enhancing healthy, profitable and sustainable natural resource systems.

Value Statement

We believe that knowledge, research and education will improve soil health and sustain Earth's most valuable asset.

The work of the Soil Renaissance will follow these guiding principles:

- Integrated systems approach
- Science-based
- Partnership driven
- Inclusive and representative
- Transparent and open source
- Communications at all levels
- Purposeful outcomes with measurable impacts
- Continuing evaluation and improvement

MEASUREMENT

Soil health measurements have for many years focused exclusively on nutrient limitations and excesses. However, for long-term sustainability of soil resources, soil health measurements need also to provide information on the biological and physical state of soil. They also need to identify constraints and explicitly guide management of these characteristics. These biological and physical processes drive agroecosystem sustainability, resilience to climate variability including drought or the ability of soil to absorb excessive rainfall, carbon sequestration and cycling, and the ability to sustain high and stable yields in agricultural production. Biological and physical soil characteristics stabilize plant nutrient availability and moderate nutrient loss. The ability to adequately understand and measure the biological and physical state of a soil will result in better overall nutrient and soil health management practices.

A goal of the Soil Renaissance is to incorporate soil health measures into standardized soil testing that is readily available, affordable, and commercially viable.



Objectives and Strategies:

1. Evaluate and develop complementarity between several new soil health tests and standardized soil nutrient testing.
 - Support the development of a standardized soil health testing.
 - Aggregate a nationwide dataset that combines Cornell Soil Health Test and Haney Test indicators with known farmer and field management information. Further refine and/or combine both test packages.
 - Identify additional soil health measures that meet criteria for good soil health indicators, beyond the Cornell and Haney tests.
 - Create and refine a standard process for additional soil health indicators and a framework for developing recommendations for farmers and landowners based on soil health measures.
 - Engage Land Grant universities in the development, evaluation and calibration of soil health tests and recommendations.
 - Set up an independent body of stakeholders to maintain a process to provide input into continued improvements in soil health testing development, interpretation and recommendations.

2. Partner with agricultural service providers to incorporate new recommendations based on soil health testing into existing management practices.
 - Develop educational materials on standardized indicators and associated management recommendations.
 - Provide content on soil health testing and management to be integrated into the Soil Renaissance education and outreach efforts with growers.
 - Create Farmer Case Studies on successes in soil health testing and data-driven soil health management to be used in efforts of the Soil Renaissance Education and Economics teams.
 - Train agriculture service providers and growers on soil health test interpretation and data-driven soil health management recommendations.
 - Organize efforts to engage private-sector and Land Grant university laboratories in providing new, standardized soil health testing packages and soil health management recommendations.
 - Integrate payments for soil health testing and management implementation into government programs, e.g. Conservation Stewardship Program (CSP) enhancements.
 - Facilitate farmer-to-farmer learning and training opportunities on practical implementation skills for soil health management practices.

ECONOMICS

The lack of specific information about the economics of conservation practices has often been cited as a major barrier to the adoption of practices to improve soil health and address other related environmental concerns. The following objectives have been designed to address this problem by gathering economic information from farmers, research trials and relevant literature on the long-term economic impacts of conservation practices such as no-till, minimum tillage, cover crops and other practices that improve soil health. This information will be integrated into decision support tools and communicated to farmers to enable them to make more informed decisions regarding the health of their soil.

A goal of the Soil Renaissance is to quantify the effects of soil health on economic risks and returns.

Objectives and strategies:

1. Evaluate the current state of research on the economics of soil health and identify key economic data needs.
 - Support public and private funding of soil health economics analysis activities.
 - Create a soil health economics network and an advisory committee to improve the development and dissemination of economic information.
 - Review the literature on the economics of soil health and conservation practice cost data from USDA's Natural Resources Conservation Service (NRCS), to determine gaps in knowledge about the economics of soil health.
 - Commission a white paper that examines the economic incentives needed for the adoption of conservation and production practices that support soil health.

2. Develop comprehensive analysis of returns to soil health investments and their effects on risk.
 - Convene leading soil scientists and agricultural economists to conduct a comprehensive analysis of the role of soil health investments.
 - Identify pilot farms for data collection activities to record medium- and long-term economic data related to soil conservation practices.
 - Create standards and metrics for estimating the status of soil health for use in conservation planning.
 - Conduct a pilot data collection project with cooperating farmers.
 - Institutionalize data collection protocols and conduct statistical analyses of test results.



3. Provide producers with information and tools for determining the economic value of soil health management decisions.

- Develop guidelines on the conditions under which different soil health practices are economically viable and estimate projected long-term payoff of these practices.
- Develop and test a decision-making modeling tool for farmers. Disseminate information and promote use of this decision-making tool.

EDUCATION

The overarching mission of the Soil Renaissance is to increase public awareness of the importance of soil health for enhancing healthy, profitable and sustainable natural resource systems. A variety of existing public and private organizations are currently involved in soil health education. The Soil Renaissance is not intended to be duplicative. Rather, it will strengthen and support those current initiatives, facilitate a common language about soil health and systematically addressing gaps in outreach.

A goal of the Soil Renaissance is to reawaken the public to the importance of soil health.

Objectives and strategies:

1. Create awareness of soil health and its importance to ecosystems and food systems.
 - Measure current public awareness of soil health.
 - Hire a communications/marketing team to develop and implement a national soil health awareness campaign collaborating with and building on existing partnerships and initiatives.
 - Cooperate and collaborate to combine and integrate common messaging into existing national and international initiatives such as: International Year of Soil, USDA's Unlock the Secrets in the Soil, The Soil Health Partnership, Global Soil Week, and Global Soil Partnership.

2. Increase knowledge, interest, understanding and adoption of soil health practices within the grower community.
 - Measure current knowledge, interest, understanding and adoption of soil health practices within the grower community.
 - Working in collaboration with Soil Renaissance Measurement Team, identify essential soil health assessment and soil health best practices to be promoted in agriculture.
 - Document and promote existing programs related to soil health, including demonstration sites, workshops and conferences.
 - Develop soil health educational materials and information sheets for use by agricultural service providers and trainers of providers.
 - Provide agricultural service providers with access to new educational and training materials to promote adoption of soil health best practices by the grower community through the creation of an electronic library.
 - Work with agricultural service providers to incorporate soil health assessment and the promotion and adoption of best practices in work with the grower community towards improved soil health.



3. Increase knowledge, interest and understanding of the importance of soil health with the educator community to expand soil health promotion and education through existing formal and informal educational programs.
 - Coordinate efforts with a national awareness campaign to target outreach to youth and community educators to promote the soil health movement in education.
 - Identify existing soil-related curriculum and programs available for use in both formal and informal educational settings for youth.
 - Develop an inventory of existing community education programs for both home and community lawns and gardens. Develop key messages and work with organizations identified through inventory of programs to encourage incorporation of soil health principles into existing curriculum and programs.
 - Develop a clearinghouse of available soil health resources, identified through an inventory and compilation, that can be promoted with educators in the field.
 - Integrate soil health into the core curriculum for agriculture and extension in higher education.

4. Increase knowledge, interest and understanding of policymakers about the importance of soil health.
 - Organize a congressional briefing on the importance of soil health.
 - Cooperate with Food and Agriculture Organization of the United Nations in the International Year of Soil workshop planned for June 2015 in Washington, DC.
 - Conduct field tours for state and federal policymakers and staff to broaden their understanding of the importance of soil health.

RESEARCH

Soils are fundamental to life on Earth, yet gaps remain in our understanding of how healthy soils can be created and maintained. The Soil Renaissance has defined soil health as *the continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals and humans*. Critically important agricultural research goals include defining the biological, chemical and physical factors that influence soil health; understanding how these factors interact and are influenced by various agricultural practices; and developing models that can lead to the generation and maintenance of optimal soil health while simultaneously resulting in economically profitable systems for farmers and ranchers. A new program initiative on soil health does not need to duplicate the past work, but needs to build on it to generate a more complete understanding of this complex area of science.

A goal of the Soil Renaissance is to convene the research community to advance soil health.

Objectives and strategies:

1. Bring the scientific community together to collaborate on soil health research and solve problems.
 - Build a core soil health research team representing key organizations and scientists in the research community.
 - Agree on operating principles and infrastructure to support future activities.
 - Develop an infrastructure and governing board that will organize and guide future activities of soil health research and deliver results.
 - Create a virtual collaborative research platform from which prioritized research activities are tracked and supported.
 - Conduct a preliminary review and prioritization of research needs by research team, including requisite review of existing soil health research and determination of soil attributes to be researched.
 - Convene a Soil Renaissance Prioritization Symposium to begin the review and prioritization process of the gaps in soil health research.
 - Conduct an annual review of soil health research priorities.
2. Ensure a steady and significant funding pool for soil health research.
 - Convey soil health research prioritization results and needs as appropriate to USDA, U.S. Environmental Protection Agency, National Aeronautics and Space Administration, National Academies of Science and other research entities.
 - Convey soil health research needs to commodity check-off programs for potential research funding.
 - Convey the Soil Renaissance research priorities to the private-sector agronomic and soils community.



- Collaborate with USDA agencies to integrate soil health priorities into the FY2016 President's Budget Proposal.
- Integrate soil health research priorities into the funding investments of USDA's Agricultural Research Service, the National Institute of Food and Agriculture (NIFA), NIFA's Sustainable Agriculture Research and Education (SARE), and NRCS's Conservation Innovation Grants funding investments.

Participants Listing

Ardmore Thought Leaders Participants

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Farm Foundation, NFP serves as a catalyst for sound public policy by providing objective information to foster a deeper understanding of issues shaping the future for agriculture, food systems and rural regions. The Foundation does not lobby or advocate. An 81-year reputation for objectivity and deep professional networks with industry leaders, scientific communities, economists and academic communities allows the Foundation to bring together diverse stakeholders for discussions on economic and public policy issues.

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THE SAMUEL ROBERTS
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The Samuel Roberts Noble Foundation has focused on soil health since it was created by Lloyd Noble in 1945 to help protect the soil and safeguard the land for use by future generations by working directly with agricultural producers to effect change in regional soil health. An independent, nonprofit institute headquartered in Ardmore, OK, the Noble Foundation conducts direct operations, including assisting farmers and ranchers, plant science research and agricultural programs to enhance agricultural productivity regionally, nationally and internationally.

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