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BEFORE THE COMMITTEE ON AGRICULTURE  
SUBCOMMITTEE ON CONSERVATION, ENERGY, AND FORESTRY  
UNITED STATES HOUSE OF REPRESENTATIVES

September 18, 2014

Good morning Chairman Thompson, Ranking Member Walz, and members of the Subcommittee. Thank you for the opportunity to be here today to discuss the importance of soil health for our nation's agriculture, our environment, and our future.

**Introduction**

For almost 80 years, the Natural Resources Conservation Service has been a pioneer in voluntary conservation, working with agricultural producers; forest managers; local, state, and federal agencies; local communities; and innumerable partners to maintain healthy and productive working landscapes.

Largely in response to the devastating effects of the Dust Bowl, on April 27, 1935, Congress passed Public Law 74-46 in which it recognized that "the wastage of soil and moisture resources on farm, grazing, and forest lands . . . is a menace to the national welfare," and it directed the Secretary of Agriculture to establish the Soil Conservation Service (SCS) as a

permanent agency in USDA. As President Franklin Roosevelt expressed in a letter to all state governors in 1937, “The nation that destroys its soil, destroys itself.”

In 1994, Congress changed SCS’s name to the Natural Resources Conservation Service (NRCS) to better reflect the broadened scope of the agency’s focus. However, NRCS continues to fulfill the conservation legacy established in 1935 by Hugh Hammond Bennett, even as it adapts to changing concerns and takes on new responsibilities to address present and future challenges.

Today, our focus on soils goes beyond erosion to include the overall health of our nation’s soils. When we speak of improving soil health, we are talking about actually enhancing the soil’s capacity to function as a vital, living ecosystem that sustains plants, animals, and humans.

Previously, we were mostly concerned with the chemical and physical qualities of soil, so focusing on soil health reflects a fundamental shift in the way we view and manage soils. As one farmer recently observed, “Anything can have quality, but only living things can have health.”

Improving soil health simultaneously addresses many of our nation’s most pressing natural resource needs. A healthy soil has better water holding capacity and therefore resilience to extreme weather like drought and heavy precipitation. Because improving soil health promotes water infiltration, this helps recharge the subsoil with water so more is available in time of need, and this greater infiltration means less nutrient and sediment runoff to our streams, lakes, and oceans. Conservation systems that enhance soil health also help increase carbon sequestration and organic matter, enhance nutrient cycling, provide pollinator

habitat, reduce energy use, and produce the food, fiber, and bioenergy needs of our rapidly growing population. Farmers tell us that enhancing soil health also increases their profitability, thereby strengthening rural economies.

### **NRCS Role**

NRCS has developed and launched an integrated campaign that emphasizes conservation planning that focuses on soil health and builds the information, tools, and knowledge needed to help producers enhance the health of their soils. There are many components of this effort that build upon one another. To date, we have focused on:

- Ensuring that the scientific basis for improving soil health is reflected in Agency conservation practice standards.
- Reviewing scientific literature and case studies to provide information needed by farmers on the benefits of soil health management systems to their “bottom line”.
- Modeling efforts at the national scale to help inform estimates of environmental benefits that may be achieved through accelerated soil health management adoption.
- Aligning funding priorities of our Conservation Innovation Grant Program to support soil health adoption needs.
- Leveraging NRCS’s network of Plant Materials Centers to conduct coordinated evaluations of cover crop mixes and their impacts on soil health across different regions, and to use these Centers as soil health training sites.

- Ensuring that all field staffs across the U.S. are trained in the basics of soil health. In just six months, we trained over 2,000 NRCS staff and partners on the fundamental principles for improving soil health.
- Establishing an on-line training library that currently holds 28 soil health webinars conducted by university and government scientists, farmers, and other partners. The training library is available to agency staff as well as the general public. Since January 2013, over 11,500 people have participated in or viewed these soil health training webinars.

In addition, NRCS has established a Soil Health Division responsible for acquiring, transferring, and implementing the latest technologies for increasing soil health. Soil Health Specialists across the country will work directly with producers, NRCS field staff, and a wide array of partners to assist in soil health management system implementation. Our Plant Materials Centers and partner field sites will be used as a national network of training and demonstration areas to promote adoption. While our initial focus is on cropland, we are already making plans for enhancing soil health on range and forest lands.

### **Partnerships in Soil Health**

Partnerships are key to the success of improving the health of our nation's soils. The soil health movement is exciting to be part of due to the speed of innovation and adoption by farmers and ranchers, as well as because of the huge array of partners—including agricultural

production associations, universities, Soil and Water Conservation Districts, federal agencies, and non-profit conservation organizations—that are leveraging each other’s expertise and resources. Collectively, we are bringing forward new ideas, solutions, and practical on-the-ground know-how to support producers.

For NRCS, the core of our partnership is with individual farmers and ranchers with whom we work daily to plan and implement soil conservation measures that help them achieve their economic and conservation objectives. These producers are making positive soil health decisions field by field that together are generating benefits for not only their operations, but also at larger geographic scales such as in river or lake basins.

The conservation programs supported by the 2014 Farm Bill are making a crucial difference in helping producers start soil health management systems on their operations. Soil health management is a systems approach that brings together suites of conservation practices that minimize soil disturbance, diversify soil biota, and maintain living roots and soil cover year round. Since 2009, significant numbers of producers have implemented soil health management practices through the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP) as shown in the chart below.

Occurrences of Select Soil Health-Related Practices Applied in EQIP Contracts Fiscal Years 2009 to 2013			
Practice Code	Practice Name	Number of Contracts	Amount (Acres)
328	Conservation Crop Rotation	3,468	707,256
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	4,514	3,040,608
340	Cover Crop	9,541	2,294,294
484	Mulching	3,000	114,015
512	Forage and Biomass Planting	13,062	939,807
528	Prescribed Grazing	6,575	10,072,933
590	Nutrient Management	13,742	5,212,792
Grand Total		53,902	22,381,705

Occurrences of Select Soil Health-Related Practices in CSP Contracts Fiscal Years 2010 to 2013			
Practice/ Enhancement Code	Practice Name	Number of Contracts	Planned Units (acres)
328	Conservation Crop Rotation	497	290,333
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	389	192,765
340	Cover Crop	313	85,522
CCR99	Resource-Conserving Crop Rotation	1,484	577,622
PLT02	Monitor key grazing areas to improve grazing management	6,904	13,364,174
SOE05	Intensive no-till (Organic or Non-organic systems)	217	104,463
SQL04	Use of Cover Crop Mixes	2,848	916,493
WQL10	Plant an annual grass-type cover crop that will scavenge residual nitrogen	1,959	667,171
WQL13	High level Integrated Pest Management to reduce pesticide environmental risk	5,567	5,640,044
WQL21	Integrated Pest Management for Organic Farming.	115	61,417
Grand Total		20,293	21,900,003

NRCS is also partnering with diverse organizations, such as USDA’s Risk Management Agency and Farm Service Agency, the National Soybean Association, Midwest Cover Crops Council, National Wildlife Federation, Univ. of Missouri, National Crop Insurance Services, Inc., and others to develop national guidelines for cover crops to ensure their beneficial use in crop production.

NRCS is also working with the National Association of Conservation Districts to leverage the expertise and local delivery capacity of Conservation Districts to develop an inventory of demonstration sites to promote adoption of soil health management systems across the nation.

To accelerate the knowledge of and exposure to soil health practices on farming and ranching operations, we partnered earlier this year with USDA Sustainable Agriculture, Research, and Education (SARE), the Howard G. Buffett Foundation, and the Soil and Water Conservation Society to hold a National Cover Crop and Soil Health Conference that

reached over 6,000 producers in a single day on the benefits of cover crops and soil health management systems.

We are partnering with the National Corn Growers Association, Monsanto, The Nature Conservancy, Environmental Defense Fund, USDA's Agricultural Research Service, and numerous universities in establishing and evaluating soil health demonstration field sites to encourage adoption of soil health promoting practices.

Finally, NRCS is partnering with the Farm Foundation and the Samuel Roberts Noble Foundation to encourage adoption and elevate awareness of the economic, environmental, and production benefits of soil health management systems. And we are partnering with the National Grazing Lands Coalition to begin efforts to increase soil health knowledge and adoption on rangelands and pastures.

### **Benefits for Agriculture and the Environment**

The benefits of healthy soils are tangible for the producer, the environment, and ultimately the public. Farmers and ranchers in nearly all parts of the country, across a wide range of climate zones and cropping systems, are reporting that they see connections between improved soil health and more consistent (and often higher) yields, higher profit margins, and more weather-resilient operations.

Weather resilience in soils has always been important and will continue to be even more so as we work to improve our natural defenses against climate change and extreme weather, such as extended droughts and severe storms, as well as indirect effects such as changing threats from pest populations and plant diseases. Healthy soils will be a key component for

agricultural producers to successfully adapt to these challenges and will help ensure that we can continue to meet the food demands of a growing population. We are already seeing specific examples of how healthy soils are making a difference.

Following the historic drought in 2012, USDA-SARE and the Conservation Technology Information Center surveyed over 750 farmers about their use of cover crops. Cover crops, which are grown during the off-season to reduce erosion, conserve moisture, and build organic matter, are an important tool for enhancing soil health. In the seven states hit hardest by drought in 2012, farmers using cover crops in their production mix had corn and soybean yields that were 11-14 percent higher than those without a cover crop.

In addition to survey information from producers, NRCS has learned of positive soil health results directly from individual producers. For example, Steve Groff farms 225 acres in Lancaster County, Pennsylvania, where he grows corn, soybeans and small grains, as well as pumpkins. Through more than 30 years of using no-till and multi-species cover crops, Mr. Groff reports that he has increased his soil organic matter from two percent to almost five percent, and has obtained yields that exceed local averages by ten percent.

Gabe Brown, who farms about 2,000 acres near Bismarck, North Dakota, keeps soil covered with dense, diverse plants and cover crops, while also integrating livestock into his soil health management system. Mr. Brown reports that he has more than doubled his soil's organic matter content, and these healthy soils have resulted in higher than county-average yields.

In Carroll, Ohio, Dave Brandt farms a corn-soybean-wheat rotation on 1,500 acres. For more than 35 years, he has used a soil health management system with no-till, diverse cover



crop mixes, and crop rotations; and has increased his soil's organic matter from two percent to over five percent. Even during the drought of 2012, Mr. Brandt reported that he averaged 170 bushels of corn per acre, which was nearly twice the yield of his conventional farming neighbors.

Ray Styer, who grows corn silage and multi-species cover crops on 80 acres in Rockingham County, North Carolina, reports that he has more than tripled his soil organic matter and obtained yields that are four tons per acre above the county average.

While these examples show that soil health is making a difference in the lives of individual farmers, their families, and their profitability, the broader public value of the conservation investment should also be recognized. The value of soil health for resilient food production systems is seen in the marketplace every day. Benefits to the environment are also demonstrable.

Our Conservation Effects Assessment Project, which has now evaluated conservation impacts covering over 300 million acres of cropland, has estimated that the same practices we use to enhance soil health--such as no-till, cover crops, and crop rotation--have reduced edge-of-field sediment loss by 47-73 percent, phosphorus loss by 33-59 percent, and nitrogen loss in runoff by 35-58 percent.

Yet, there is more to be done. Events like drought in Texas and California and algal blooms in Lake Erie and Lake Champlain, coupled with the need to meet the demand for food, fiber, and fuel for a growing population, tell us the time is now to enhance the health of our nation's soils.

## **Conclusion**

Mr. Chairman, I will conclude by saying that I believe improving the health of our nation's soils is one of the most important things that we can do for this and for future generations. That is because improving soil health not only supports growing the food, fiber, and fuel needed by a rapidly expanding world population, but it also allows us to simultaneously address some of our nation's most pressing natural resource needs. It allows us to increase resiliency to extreme weather events, improve water quality, increase carbon sequestration, enhance habitat for pollinators and other wildlife, increase farm profitability, and we believe also reduce economic risk associated with crop production.

I thank you for the opportunity to be here today, and I will be happy to answer any questions you may have.