Testimony of
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Executive Director of the Soil Health Partnership, National Corn Growers Association

Before the
U.S. House of Representatives Committee on Agriculture
Subcommittee on Conservation and Forestry

Hearing on
Managing for Soil Health: Securing the Conservation and Economic Benefits of Healthy Soils

June 25, 2019

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Chairwoman Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee:

Thank you for the opportunity to appear here today to share the story of the farmers we serve, and their investments in soil health on their farms. We applaud the Subcommittee's interest in, and commitment to, learning about the benefits of soil health practices and the efforts farmers are making to blaze a trail in conservation that benefits their lands as well as society broadly.

I am Dr. Shefali Mehta, the Executive Director of the Soil Health Partnership, a program of the National Corn Growers Association (NCGA). Having the opportunity to visit many farms across the world and work with numerous producers, I can attest to the many efforts led by farmers to be stewards of their lands and the impact soil health investments have for long-term agricultural productivity. The Soil Health Partnership began in 2014, when The Nature Conservancy and Monsanto (now Bayer), alongside the Environmental Defense Fund, shared the vision of developing a farmer-led research network which measured the impacts of implementing soil health practices on working farms. True to their vision of being led by farmers—and existing to serve farmers—the Soil Health Partnership partnered with NCGA and continues to be administered as our flagship sustainability program. NCGA represents 40,000 dues-paying corn farmers nationwide and the interests of more than 300,000 growers who contribute through corn checkoff programs in their states. NCGA growers are proactively working to support farmers pursuing ways to more fully utilize appropriate sustainability tools. Through the Soil Health Partnership, corn growers are on the ground serving as a resource for other growers adopting soil health improvement practices.

Today, the Soil Health Partnership works alongside more than 220 farmers as they try new soil health practices on their farms. Joined most recently by the National Wheat Foundation, our network spans over 15 states and 100 partner organizations at the federal, state and county level including state government, commodity associations, nonprofits, foundations, and private companies. We have a team of eight experienced field managers that

work hand-in-hand with farmers in their region. When a farmer joins our program, he or she works with the designated field manager to design an experiment on a field that compares a soil health practice, or combination of practices, to the typical management undertaken historically on the field. Our partner farmers work with us over five years to measure the impacts of the practice change. We measure basic soil macro- and micronutrients every year on the field, as well as soil health indicators every other year. Through this process, we are creating an in-depth data set from which to support farmers' decisions and to understand the long-term changes in soil health over time. We look for impacts on yield, input use, and the farmer's profitability. We also examine the near-term risks associated with adoption of practices, and long-term risk reduction and increased resiliency that comes from these practices.

Soil Health Practices and Management Systems

The farmers we work with are exceptional land managers looking for partnership on their journey to improve the economic and environmental sustainability of their farm operations. Many are looking to reduce or eliminate tillage, to try cover cropping, or to experiment with nutrient management in an advanced soil health management system. In addition to these key soil health practices, we are now working with farmers who are incorporating grazing of cover crops as forage for livestock and experimenting with using manure and diverse crop rotations to build soil health. Our goal is to meet the needs of our farmers. This means we have expanded our offerings in line with the needs and requests of farmers trying to add more "tools" to their toolkit and find more ways to create economic diversification and support in this tough climate.

To provide some background on these practices, no-till, strip-till, and reduced tillage are all ways of managing the soil prior to planting. These practices reduce or eliminate plowing (or tillage). Historically, tillage has been used to prepare soil for planting and is used to manage weed pressure. However, tillage can impact the soil in negative ways by contributing to compaction of the soil and soil erosion. Tilling less intensively—or not at all—can reduce soil

disturbance, which can minimize compaction, improve soil structure and function, improve soil water holding capacity, and reduce soil erosion.

Growing a cover crop means planting a crop, usually after harvest, primarily for soil health or conservation purposes. Cover crops are not typically harvested or sold, which means that they are not a direct income stream for the farmer. However, for farms that raise livestock and grow crops, cover crops can be used as a forage source for livestock, either by letting the livestock graze the cover crop directly, or by harvesting the cover crop to be fed to livestock.

Reducing tillage, incorporating cover crops, and practicing advanced nutrient management are all key soil health practices that can be incorporated into a soil health management system. They fit within broad soil health principles put forth by the U.S Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), which include minimizing soil disturbance, maximizing soil cover, maximizing biodiversity, and keeping living roots in the soil.

We recognize these practices are not a silver bullet but must be understood in concert with the specific geographies where they are adopted and the goals and needs of the individual farming operations. Our data illustrate these practices can yield varied outcomes, even when implemented on different fields in the same farms. Our work strives to better understand these impacts so farmers can use these tools with greater efficiency.

On-Farm Benefits and Costs of Soil Health Practices

Although we are still working to quantify the benefits and costs of soil health practices and management systems across our farmer network, we know that managing for soil health can have concrete impacts. Our initial analyses show that farmers participating in the Soil Health Partnership for more than 3-5 years have seen increases in soil organic matter of one-third to one-half percent. Though this might not sound like much of an increase, soil organic matter typically changes very slowly with a change in management and is a key indicator of soil

health. Increased soil organic matter means that the soil is able to infiltrate and store more water, which can result in reduced runoff and soil erosion, as well as make the soil more resilient to extreme weather events, such as droughts or floods. Soil organic matter increases may also be linked to increased carbon sequestration. These and other increases we have witnessed in our network and our dataset highlight ways of creating soil health benefits at greater rates: strong management practices coupled with support, farmer knowledge sharing, providing the right tools at the right time and the use of multiple practices in concert.

We hear from our farmers that improving soil structure and reducing soil erosion can have other concrete benefits, such as making it easier to work in wet fields earlier in the spring, or reducing time spent managing sediment at the edge of the field. For some farmers who are reducing tillage, there can be clear cost savings through decreased machinery and fuel use, time and labor. Over time, improvements in soil health may result in more productive soil or reduced need a for costly farm inputs. The ability to reduce risks and increase long-term resiliency of the land are also benefits. We are studying these types of questions at the Soil Health Partnership through our on-farm demonstration research plots as well as our unique, long-term data set. Our data indicate that farmers invest in these practices because they believe in the indirect and long-term benefits such as living, healthy soils for their future generations, creating increased land resiliency and knowing they are giving back to the land that sustains us.

Benefits of Soil Health Practices Beyond the Farm

Improvements in soil health can have on-farm impacts, but the impact extends beyond the farm. By reducing nutrient runoff and soil erosion, improvements in soil health can translate into improvements in water quantity and quality. Reducing tillage can increase water quantity over time and growing a cover crop can have a direct impact on water quality by tying up nitrogen in a growing plant and keeping the soil in place in the spring prior to planting when it is perhaps most vulnerable to runoff into streams and rivers. Although many are still studying the

capacity of agricultural soils to store carbon under diverse management practices and in different locations, there is research that suggests a vast potential for soil health management systems to reduce greenhouse gas emissions from agricultural production and sequester carbon in the soil. This means that soil health practices and management systems, combined with broader societal efforts, hold the potential to help mitigate climate change.

Soil Health Practices Require Management of Risks and Costs to Implement

Although there are clear benefits of managing for soil health, we must not lose sight of the fact that transitioning to soil health practices and management systems can be both costly and risky for farmers. It may take time for a farmer to determine what combination of practices works well in the context of their production system, and the benefits of improving soil health may only appear after many years.

In the case of cover crops, a farmer has to select a cover crop or cover crop mix, and purchase seed, which has a direct cost. Different species of cover crops work well in different agronomic environments and require some trial and error to get it right. The farmer also has to determine when and how to seed a cover crop before or after they harvest their cash crop in the fall. The timing of cover crop planting is critical to realizing the benefits of a cover crop and getting a cover crop growing in the fall can be difficult as days grow shorter and colder. In the spring, the farmer has to decide when and how to terminate (i.e., kill) their cover crop, in order to make sure that their field is ready to support the following cash crop they are planting in the spring. Farmers have to learn how to manage fertilizer and other inputs in order to support cash crop growth after a cover crop. Additionally, decisions need to be made on what other inputs they can use in their system that will support the growth of the right crops, at the right time. Data from our farmer network suggest that there is not significant yield loss, on average, from using a cover crop--but neither is there a significant yield gain. Further research and information sharing

will shed more light on the full costs, and ways to manage these costs of various beneficial soil health practices.

Advancing Adoption and use of Soil Health Management Practices

With farmers leading the way, and by working together with numerous partners, we can better understand the benefits of soil health practices and inform farmers on the best ways to manage the associated risks so that their operations are both economically and environmentally sound. Collaborations are key to successful outcomes in this arena - no one group can go it alone. Through strong outcome-based collaborations, like ours, we have seen greater awareness and adoption of soil health practices. With stronger data and input across our diverse growing regions, we are learning more about the economic impacts to farmers and ways to improve adoption by mitigating risks and improving the bottom line.

We continue to strive to ensure that the farmers we work with have access to the best information to make the right decisions for their farm. Soil health practices and management systems may, but do not always, make short-term economic sense for a farmer. It is our responsibility to continue to study the impacts of adopting soil health practices across the landscape so we can better understand where--and when--soil health practices are likely to be adopted by farmers, and where these practices have the greatest benefit for society.

As farmers invest in soil health practices, we also want to ensure that they receive compensation for their private investments, which can have substantial public benefits ranging from improving land health, biodiversity, water quality and quantity, reductions in greenhouse gas emissions, amongst others. By supporting farmers making these investments, we increase the overall well-being of farmers and society.

Thank you for your time and your continued support of effective mechanisms that enable farmers to adopt the practices that best fit their operations which create benefits for all of us.

Committee on Agriculture
U.S. House of Representatives
Information Required From Nongovernmental Witnesses

House rules require nongovernmental witnesses to provide their resume or biographical sketch prior to testifying. If you do not have a resume or biographical sketch available, please complete this form.

1. **Name:** Dr. Shefali V. Mehta

2. **Organization you represent:** National Corn Growers Association's Soil Health Partnership Program

3. **Please list any occupational, employment, or work-related experience you have which add to your qualification to provide testimony before the Committee:**
   Dr. Mehta is Executive Director of National Corn Growers Association's Soil Health Partnership Program. She also founded and leads Open Rivers Consulting Associates, serving clients in agriculture and the environment. In prior positions, she worked in roles across private, public and nonprofit sectors at organizations including McKinsey and Company, Syngenta, the Minnesota Office of Higher Education, St. Olaf College, the Federal Reserve Bank of Minneapolis and the American Cancer Society as well as advised nonprofits such as Pheasants Forever and the Minnesota Invasive Terrestrial Plants and Pest Center.

4. **Please list any special training, education, or professional experience you have which add to your qualifications to provide testimony before the Committee:**
   Dr. Mehta received her PhD in Agricultural and Applied Economics and MS in Statistics from the University of Minnesota, MPhil in Economics from Cambridge University and a BA in Economics from New York University.

5. **If you are appearing on behalf of an organization, please list the capacity in which you are representing that organization, including any offices or elected positions you hold:** Executive Director of the Soil Health Partnership Program

PLEASE ATTACH THIS FORM OR YOUR BIOGRAPHY TO EACH COPY OF TESTIMONY.

Truth in Testimony Disclosure Form

In accordance with Rule XI, clause 2(g)(5)*, of the *Rules of the House of Representatives*, witnesses are asked to disclose the following information. Please complete this form electronically by filling in the provided blanks.

Committee: Agriculture

Subcommittee: Conservation and Forestry

Hearing Date: June 25, 2019

Hearing Title :

Managing for Soil Health: Securing the Conservation and Economic Benefits of Healthy Soils

Witness Name: Shefali Mehta

Position/Title: Executive Director

Witness Type: ☐ Governmental ☉ Non-governmental

Are you representing yourself or an organization? ☐ Self ☉ Organization

If you are representing an organization, please list what entity or entities you are representing:

The Soil Health Partnership, National Corn Growers Association

If you are a <u>non-governmental witness</u>, please list any federal grants or contracts (including subgrants or subcontracts) related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current calendar year and previous two calendar years. Include the source and amount of each grant or contract. *If necessary, attach additional sheet(s) to provide more information.* **House Rules do NOT require disclosure of federal payments to individuals, such as farm program payments or assistance to agricultural producers.**

Please see attached sheet with list of grants

If you are a <u>non-governmental witness</u>, please list any contracts or payments originating with a foreign government and related to the hearing's subject matter that you or the organization(s) you represent at this hearing received in the current year and previous two calendar years. Include the amount and country of origin of each contract or payment. *If necessary, attach additional sheet(s) to provide more information.*

N/A

Soil Health Partnership Federal Grant Summary

The Soil Health Partnership received grant number 69-3A75-17-15 entitled "Scalable On Farm Greenhouse Gas Reductions and Water-Quality Improvements: Development and Implementation of an Economical and Verifiable Insetting and Accounting Framework" on December 6, 2016. This was awarded as a Conservation Innovation Grant through USDDA NRCS. The Federal award amount for the grant is $999,749 of which Soil Health Partnership has received $659,511.46 to date and the remaining $340,237.54 will be received upon further completion of the project.

The Soil Health Partnership received grant number NR186740XXXXG011 entitled "Expanding the Soil Health Farmer Network into South Dakota" on September 11, 2018. This is a Conservation Collaboration Grant awarded by South Dakota NRCS. The Federal award amount for the grant is $292,500 of which Soil Health Partnership has received $20,863.12 to date and the remaining $271,636.88 will be received upon further completion of the project.

The Soil Health Partnership received funding from the Foundation for Food and Agriculture Research (FFAR) as a sub awardee on Grant ID 523926 entitled "Assessing and Expanding Soil Health for Production, Economic, and Environmental Benefits". This subaward was awarded on December 1, 2017 for $3,419,145 to Soil Health Partnership of which Soil Health Partnership has received $3,021,963. The remaining $397,182 will be received in December 2019.