

EPA's Potential Role in Supporting Soil Health

FRRCC Report to the Administrator

The role of the Farm, Ranch and Rural Communities Committee (FRRCC) is to advise the Administrator and the Agricultural Counselor on pressing issues of importance to EPA and the Agricultural Community. In winter of 2015, Administrator McCarthy asked the FRRCC to provide guidance on how EPA might engage in promoting Soil Health. Her charge states:

“Recognizing the agency’s regulatory mission to protect public health and the environment, how can EPA best create a framework for facilitating partnerships that build upon existing resource protection efforts through collaboration and innovation? In what ways can this framework advance the Agency’s knowledge, efforts and use of resources to promote soil health, particularly as it relates to water and air and to the adaptation to a changing climate?”

Initially, the committee questioned why the USEPA was interested in prioritizing the promotion of soil health in the charge to the FRRCC. EPA is a regulatory agency and has no clear regulatory authority over soil health. However, after considerable deliberation the committee arrived at the understanding that many of EPA’s regulations and programs rely on knowledge about soil quality and characteristics and also have very important impacts on soil health. In fact, the word soil and/or sediment is included at least once in more than 400 subsections of EPA regulations. The committee also learned of the Administrator’s desire to engage the agricultural community in ways that avoid potential problems before they arise or become so serious that a regulatory response is necessary. The fundamental role of soil health and vigor to agriculture is well understood, and the importance of minimizing soil erosion to meet water quality goals has been a high priority environmental goal for many decades. However, other environmental benefits of soil health are now also receiving well-deserved attention. The role of soil health in efficient nutrient cycling, water infiltration, buffering of pollutants, carbon sequestration and in assessing and addressing impacts of climate change are significant. Encouraging the agricultural community to voluntarily improve soil health both advances EPA’s core mission to protect clean water and clean air and helps to mitigate the negative impacts of climate change.

To be clear, FRRCC is emphatic that EPA should not assume any regulatory role over farmers and ranchers with regard to soil health. There is presently a great deal of antipathy in the agricultural community for the Agency. The framework that the FRRCC is proposing is intended to be helpful to mend the damage resulting in part from the Waters of the US rulemaking controversy and the fact that EPA provided financial support to the disparaging “What’s Upstream?” public relations campaign in the State of Washington (<http://whatsupstream.com/>). Our report is not based on any discussion of statutory authority or legal requirements related to soil health, but rather is based on the principle of establishing, as requested by the Administrator, an effective framework for working with America’s farmers

to protect and sustain our nation's soils. To establish productive partnerships, collaborations and innovations, that in themselves are sustainable in the long haul, EPA will need to constructively engage with farmers and with key government and other external partners that collaborate with America's farmers. Farmers are concerned about aggressive extension of regulatory authority, so it is important for the Agency to dispel perceptions of a regulatory intention as it provides key information important for soil health to the agricultural community and those working with them. It would be helpful for EPA, while not diminishing its interest, to acknowledge that the primary role in improving soil health resides within the US Department of Agriculture (USDA). A high level memorandum of understanding between government agencies to clarify roles and align resources would provide a positive and reassuring message to the nation's farmers. The current White House Call to Action to protect America's Soils by the Office of Science and Technology policy could be an appropriate venue to develop and implement a long term strategy on soil health.

The FRRCC urges USEPA to seize the opportunity to use the dialogue regarding soils as a means to foster a more balanced engagement with agriculture that can be used as a template for future activities. EPA can help the agricultural community better understand the role its regulations, programs and educational initiatives have on soil and soil health. A transformation in how EPA relates to and engages with agriculture can change the dialogue for the better, leading to a new level of collaboration and partnerships that will ultimately result in more sustainable environmental protection. A recent EPA program, *The Nutrient Recycling Challenge*, (www.nutrientrecyclingchallenge.org)¹ is a good example of a direction that the committee would like to see EPA take when dealing with agricultural clients. Programs that emphasize collaboration and partnerships will serve to enhance willing participation and create a sense of ownership by producers, ultimately proving to be self-sustaining.

EPA should not regulate how soil health is managed



Nevertheless, it should promote soil health.

This action can both advance its mission and help transform the Agency's engagement with agriculture. Moving forward, the Agency needs to encourage the participation of farmers, ranchers and producers in the sustained delivery of essential environmental services.

Only through a new paradigm of collaboration and partnership can it hope to achieve clean water, clean air and resilience to climate change without imperiling an industry that can deliver those services while feeding our country and much of the world.

¹ The Nutrient Recycling Challenge was a competition for technologies to recycle nutrients from livestock manure. EPA received 75 concept papers, and awarded a total of \$30,000 in cash prizes to the top ten submissions (four "Winners" and six "Honorable Mentions"). 34 submissions will proceed to Phase II.

Additional examples of the kind of framework that can help both EPA and America's producers achieve an enhanced relationship are the Michigan Agriculture Environmental Assurance Program (MAEAP)² and the California Dairy Quality Assurance Program (CDQAP)³. Both of these programs should include full involvement and interaction by EPA's Regional offices and can also serve as models for future EPA activities. In fact, Region 9 provided startup funding to develop the initial CDQAP.

Successful engagement between the Agency and agriculture on soil health should include the recognition of on-going activities, local conditions, economic considerations and the need for more research.

Soil health and vigor are very much on the minds of America's farmers. More and more farmers are implementing management practices to keep soils covered and support their health. Nationwide, farmers are employing organic matter retention, cover crops, diversified rotations, erosion control and other measures to enhance soils. The farm equipment industry is also responding with new and improved models of equipment. In short, agriculturists care about their soils and are acting within their economic boundaries and production certainty to protect soils. EPA should recognize producers for pro-active and ongoing actions.

All agriculture is local and America's farmers and ranchers must respond to unique local conditions. Equally, the most effective and successful partnerships are also local. Partnership activities by EPA need to recognize and address local conditions and factor in any significant or unique barriers to adoption. An overall umbrella of support from EPA at the national level will help set the necessary cooperative tone for the Regional offices.

Every discussion of soil health must also address economic considerations. While the benefits of conservation farming are well researched from a physical standpoint, there are real costs

² This comprehensive, voluntary, proactive program is designed to reduce farmers' legal and environmental risks through a three-phase process: 1) education; 2) farm-specific risk assessment and practice implementation; and 3) on-farm verification that ensure the farmer has implemented environmentally sound practices. The program's four systems — [Farmstead](#), [Cropping](#), [Livestock](#) and the newly developed Forest, Wetlands and Habitats System — each examine different aspects of the farm. After becoming MAEAP verified, a farm can display a [MAEAP sign](#) signifying that MAEAP partners recognize the farm is environmentally assured. <http://www.maeap.org/>

³ The California Dairy Quality Assurance Program (CDQAP) is a collaborative partnership between the dairy industry, government agencies and academia to promote the health of consumers, the health of the environment and the health and welfare of dairy animals. The CDQAP provides educational workshops and assistance focusing on the components of public health (farm security and food safety), animal care and environmental stewardship. It also provides third-party certification in Environmental Stewardship through its on-farm evaluation/certification program. <http://cdf.org/home/checkoff-investments/cdqap/>

associated with instituting changes⁴. Additionally, scientific research quantifying social and environmental benefits is inadequate. Economic considerations, especially cost/benefit relationships, also need additional focus. (The EPA guidelines for economic analyses published in 2010 and amended recently mentions the word soil or sediment in just a few places and we suggest that additional guidance to develop a benefits analyses on soil health is important). Many studies have been done on-farm and on site-specific areas to improve the technical and physical parameters of soil health and to correlate soil improvements to yield, moisture, erosion and related factors but fewer analyses have been completed to assess the economic benefits to the farm's bottom line. Moreover, it has proven difficult to capture off-farm social benefits in ways that are scientifically replicable. EPA, then, may want to consider providing research support to help address the economics of soil health. Until the benefits of soil health have been accurately monetized, even willing early adopters will be challenged to engage. Farmers will certainly continue to respond to non-economic motivations but economic factors remain the real driver for widespread adoption.

In summary, the context within which the FRRCC provides recommendations is fourfold:

- (1) EPA's engagement as a supporting partner in soil health is appropriate and the framework should be incentive-driven and non-regulatory
- (2) America's farmers care about their soils
- (3) Local considerations will govern practices
- (4) Uncertainty over how to effectively and profitably build soil health in every growing location can be significant challenges to adoption

In order to constructively engage with agriculture on soil health, EPA should expand its efforts in several areas. It should foster an agency-wide awareness of the impact that EPA regulations and programs have on soils and soil health. It should partner with USDA, the States, County and University extension and the agricultural community to support the expanded adoption of soil health practices in agriculture. And it should improve its outreach and engagement to agriculture.

Supporting Soil Health

Soil health is defined as "the continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals and humans." Soil is a living, dynamic system that acts as a mediator between agricultural production and the environment. Improved soils enhance nutrient cycling, increase water infiltration and availability, filter and buffer pollutants, provide physical stability and support and provide habitat for biodiversity. In 1993, the National Academy of Sciences published a 542 page report, *Soil and Water Quality: An Agenda for*

⁴ See recent EPA register notice (June 2016) on vegetative buffer strips stating the economic impact of developing portions of farm land for in-field buffer strips and not growing wheat or apples on that portion of the land can range from \$32 to \$2650 per acre. Moreover, the costs of establishing buffer strips range from \$160 to \$750 per acre dependent on the amount of soil preparation and type of crop to be planted. There are also ongoing costs of mowing and weed control applications which can range from \$40 to \$240/A. USDA-NRCS is an increasingly valuable source of information on the economics of improving soil quality and health.

Agriculture, that showed how soils and water quality are inherently linked. The report concludes that “Protecting soil quality, like protecting air and water quality, should be a fundamental goal of national environmental policy.”

As farmers start to experience more droughts or intense rains, their interest in improving soils to make their farming systems more productive and resilient is growing. Most farmers can increase their soil organic matter in three to 10 years by keeping their soil covered, not disturbing it, incorporating as many different species of plants as practical and keeping living roots in the soil as long as possible. Recommended practices include conservation crop rotation, cover crops, tillage management (reduced till or no-till), enhanced nutrient management, mulching and integrated pest management. For many farmers, the moldboard plow that first broke the prairie sod has been relegated to yard art status. But elevating soil health as a key goal for all farming and ranching operations will take a coordinated and consistent approach from federal and state agencies.

Recommendations

The Administrator plays a pivotal leadership role in influencing how people within the Agency value and apply our recommendations. They are offered as concrete steps that EPA can incorporate into its operations and programs to advance its basic mission . . . “protect human health and the environment -- air, water, and land”.

Goal

The Committee suggests that EPA should engage with the agricultural community to voluntarily build and maintain Soil Health in productive and economically sustainable ways by pursuing the following strategies.

1. **Strategy:** *Defer to, support and seek the help of others whose primary missions are directly tied to Agriculture and advancing Soil Health.*

Activities

- Proactively engage USDA to identify opportunities where EPA could fill gaps with its resources and align its regulatory authorities where possible to remove barriers and facilitate the voluntary adoption of soil health building practices.
 - Reach out to engage the broader agricultural community (e.g., Producers, Ag Industries, Land Grant Universities, Community Colleges and Conservation Districts) already involved in advancing Soil Health to identify opportunities to collaboratively support their initiatives.
2. **Strategy:** *Develop a coordinated and consistent EPA approach to Soil Health outreach and engagement that helps to support awareness, increase knowledge and facilitate education across the Regions.*

Activities

- Increase institutional awareness of Soil Health within existing EPA programs.
- Communicate the benefits of Soil Health practices – internally and externally.
- Conduct an analysis of potential regulatory benefits and barriers in existing EPA programs and strive to reduce any adverse impacts on Soil Health efforts.
- Apply the Agency’s convening capabilities to gather stakeholders around the topic of Soil Health.
- Establish cross-program teams to seek out opportunities to integrate advancement of Soil Health into other EPA programs.
- Determine and seek additional resources needed for EPA to effectively engage with other key contacts and collaborators with the Agricultural community in improving Soil Health.

3. **Strategy:** *Support and provide funding for research into tools and models for farmers to use to measure benefits gained from Soil Health practice implementation.*

Activities

- Continue to utilize novel ways to inspire creativity in development of new solutions (e.g., adapt the existing the Nutrient Recycling Challenge as a model for change).
- Develop a simplified methodology to quantify soil carbon improvement for the purpose of documenting carbon credits.
- Support practices and technologies that benefit soil health by more effectively managing resistant weeds, diseases and insects and invasive plants and pests.

4. **Strategy:** *Exercise its influence in other venues where regulatory authority is clear to incentivize the adoption of Soil Health practices.*

Activities

- Allow the use of “in lieu” fees or penalties that have been assessed to support Soil Health programs within watersheds or other areas targeted for improvement.
- Allow for Soil Health considerations in regulatory settlement agreements.
- Establish Soil Health as a framework within which 319 funds can be applied.
- Encourage states to incorporate Soil Health into State Nutrient Reduction Strategies as a key target to accomplish water quality goals.
- Elevate and prioritize review of new pesticide active ingredient and other technologies, and expanded uses for products under registration review for promising tools to help farmers control resistant weeds, diseases and insects and invasive plants and pests while protecting soil health.
- Recognize but do not mandate Soil Health practices as beneficial options in priority watersheds (e.g., when developing TMDLs and non-attainment plans).
- Encourage state and local agencies (e.g., public utilities) to contract with farmers, when appropriate, for the implementation of Soil Health practices as acceptable alternatives to the construction of brick and mortar projects.

- Quantify and incorporate the value of Soil Health for carbon sequestration into the Agency's climate change response including the development of market pathways for purchase and sale of carbon credits.

5. **Strategy:** *EPA should review its regulations and programs and summarize key areas that impact soil health and include information on benefits and potential barriers to protecting soil health to incorporate into education opportunities and incorporate into Education and Outreach activities.*

Activity

- Include soils and soil health as part of the prioritization process for the development of EPA's next strategic plan. EPA should prioritize research and methodologies that will increase an understanding of soils and soil health such as updating scientific modeling and technologies to include the best available data and technology advances. Examples include improving modeling of below ground soil pests, developing refinements of models to take into account bi-phasic degradation of chemicals in soils, refining science modeling to include water flow/sediment binding as well as refining assessments on best management practices to reduce the impact of sediment on the designated use of a water body, and analyze regulations involving soil that could support USDA APHIS efforts in prevention, rapid response mitigation and elimination of invasive pests.

Outreach and Communication

The FRRCC has worked on several issues over the years at the request of the Administrator. Many of the selected topics are technical in nature. The committee has tried to address all of these issues and has committed considerable time and effort to provide meaningful information and recommendations to the Administrator. Whether assigned or not, one topic keeps reoccurring in each of the FRRCC meetings and reports: the need for improved outreach and communication between EPA and the agriculture community. The members of the committee consistently have expressed concern that a wide communication gap exists between the agriculture community and EPA. Although soil health is the assigned issue for the FRRCC this time, we cannot address that issue without again reminding the Administrator that outreach and communication is the issue that transcends all of the others that the FRRCC has considered.

Background – Concerns of the FRRCC

The Ag community believes it is critical for EPA to engage the agricultural sector through information provided to USDA, extension, universities or others in the agricultural community or at times directly to growers to:

- Mutually build trust between EPA and the key grower contacts and collaborators;
- Understand what is important to producers and better understand the barriers, motivations and needs of producers in order for them to be both profitable and contribute to environmental goals;

- Be more aware of impacts of environmental regulations on the agricultural community;
- Receive input from the agricultural community at the ‘grass-roots’ level to understand their issues/challenges and to provide input to collaboratively identify solutions;
- Understand information farmers/producers have identified on potential negative impacts that ag activities may have on future yields and the ability to adapt to more severe weather events, emphasizing a positive relationship between sustainability and profitability.

Accordingly, the FRRCC has included questions and recommendations over the past several years related to improving outreach and engagement between EPA and the agricultural community. If these recommendations were fully addressed, the FRCC feels strongly that relationships between the agriculture community and EPA could be significantly improved and strengthened.

In 2009 (Advice Letter) and again in 2011 (Committee Report) the FRRCC posed numerous questions in its documents that were delivered to the Administrator. These recommendations were broken into several categories:

- Encouraging more effective two-way communication
- Leveraging partnerships with agricultural entities for a variety of purposes:
 - Better regulatory coordination, compliance, and understanding of impacts to the agricultural sector
 - Incentivizing and recognizing superior environmental management or innovative agricultural conservation
 - Scientific research on management practices to economically achieve environmental protection
- Strategically leveraging resources:
 - Leveraging external resources and EPA program resources
 - Ensuring adequate EPA staff and resources to address agricultural challenges

Encourage Two-Way Communication

The FRRCC has emphasized the importance of having trusted local individuals with the technical and social skills to effectively communicate, educate, perform and persuade, and who are available for the “long-haul” in sufficient numbers to reach key stakeholders.

Specifically, FRRCC recommends stronger EPA regional agricultural presence – not for regulatory purposes but as information gatherers and disseminators providing more information to the agricultural community about environmental policies, trainings, assisting in catalyzing technology transfer, and sharing ag/environmental updates. FRRCC also recommends making information and technology more visible and accessible to producers.

Leverage Partnerships with Agricultural Entities

The FRRCC believes more partnerships with agricultural entities are needed for better coordination of and education on regulations related to agriculture; for more effective, broad dissemination of information on and recognition of best management practices and land stewardship/conservation; and to develop more effective technology transfer programs. As a result, the FRRCC recommended that EPA strengthen traditional partnerships and expand into non-traditional relationships to leverage EPA resources more strategically.

Strategically Leverage Resources

Adequate resources (staffing, agricultural expertise, informational materials, money, facilities, and time) are needed to develop and implement targeted technical, educational, and financial assistance programs at every scale (national, regional, state, tribe, local and farm) to effect and sustain positive change.

Additionally, recognizing EPA's resources are limited, strategic investments are needed in actions that yield the highest returns. Leveraging resources of other federal agencies is one approach to improve effectiveness and reach of currently available resources for the development and delivery of critical best management practices.

Improvements are making a difference

The FRRCC acknowledges the good work that EPA has done to improve its approach to agricultural environmental issues. Although recent frequent turnover in the Administrator's Agriculture Counselor position has been disruptive, it is an essential liaison for the agriculture community. That position has generally been occupied by well qualified individuals who care deeply about the environment and agriculture. Other examples include:

- The Office of Water's consistent attendance at FRRCC meetings
- The Manure Management Challenge
- Investment of Section 319 funds (See Oklahoma Non-point Success stories)
- Region 9 proactive engagement with farmers on the topic of soil health
- Region 10 collaboration with mint farmers to address nitrate leaching in a non-regulatory manner

These are the types of programs and approaches that will pay many environmental dividends in the future. EPA's best opportunity may be through its regional agriculture coordinators – dedicated individuals who make a tangible difference and could generate even more impact if they were 1) able to fully commit to their agriculture coordinator duties and 2) were funded to travel to agricultural gatherings within their regions. In addition, the existence of the FRRCC itself tells those in agriculture that EPA is aware of the need to interact with the agriculture community. Unfortunately, until the past year this particular configuration of the Committee was largely unsupported, which served to undermine the message.

The FRCC feels that the Administrator should seize the opportunity to leave an unprecedented legacy for her successor by starting the Agency down a path that works collaboratively with

USDA and other stakeholders. It will positively impact and transform interactions between EPA and agriculture.

Communication Recommendations

The FRRCC recognizes that historically there has not been funding for the above described activities and that funding is a barrier to the desired, necessary transition of the nature advanced here. Accordingly, we lend our collective support to the Administrator and urge Congress and the Administration to provide dedicated funding to allow EPA to implement the recommendations from this committee to achieve the key goals.

Although the FRRCC has made many recommendations to the Administrator over the years and continues to await answers or actions to implement some of these recommendations, the current Committee believes that several basic actions would provide immediate improvement in the relationships between the agency and agriculture and leave a lasting positive legacy.

1. Agriculture coordinator positions in each region should be fulltime positions and not merely part of someone's job.
2. Agriculture coordinator positions in each region should be adequately funded to encourage constant travel to agricultural gatherings in each region, not just a trip or two.
3. Each region should establish and convene an FRRCC-like committee to advise the regional agricultural coordinators.

The FRRCC believes that a constructive relationship between EPA and the agricultural community can be achieved and that it starts with committed local outreach and communication. The key to EPA building that bridge to a suspicious ag community is boots on the ground – meet with producers on their turf.