July 28, 2020

Mr. Stephen Censky
Deputy Secretary
United States Department of Agriculture
1400 Independence Avenue, SW
Washington, DC 20250

Re: Solicitation of Input from Stakeholders on Agricultural Innovations
Docket No. USDA-2020-0003

Dear Deputy Secretary Censky:

On behalf of Sand County Foundation (SCF), I appreciate the opportunity to provide comments on the United States Department of Agriculture's (USDA) Solicitation of Input from Stakeholders on Agricultural Innovations (Docket Number: USDA-2020- 0003).

SCF is a 501(c)(3) non-profit conservation organization whose work over 52 years has grown through inspiration, innovation, and investment to:

- Support private individuals and communities as primary agents of conservation.
- Reward responsible stewards, provide public recognition for top private land leadership.
- Facilitate exchange of information among individuals, scientists, funders, policy makers.
- Remove barriers and create meaningful incentives for landowners who improve land health.
- Create on-the-land examples of environmental improvement suitable for replication.

Together with project partners, SCF recently published a collaborative, comprehensive report (Peterson et al., 2020) identifying five focus areas critical to achieving water quality goals through the advancement of agricultural conservation. Although the report pertains to water quality, the outcomes summarized below are applicable to reducing agriculture's environmental footprint and relevant to the four innovation clusters identified by the USDA.

1. **Encourage collaborative-based, conservation initiatives that engage private industry and address broader societal benefits to gain wide-scale momentum and sustain long-term impact.**

- Conservation adoption often competes with other regional-based agricultural priorities, such as profitability, tradition, or cultural/social norms.
- Environmental programs must engage private industry organizations, non-governmental organizations (NGOs) and supply chain companies, while considering incentives for downstream ecological enhancement.

2. **Develop rural and urban partnerships to advance conservation while building unity and an understanding that natural resources are connected and shared.**

- Ecosystem health improvements will be accelerated by conservation programs that are cost-effective in achieving benefits for the expenditures, whether publicly or privately funded.
- Compliance offsets mechanisms, such as nutrient trades between regulated point source entities and private landowners implementing conservation practices with public benefits, create economic incentives for both parties to improve environmental quality.
- Ecological services could be provided by those who traditionally made their living on the land; this will demand creation of new institutions that can bring sellers and buyers together, reduce transaction costs, overcome barriers, and navigate regulatory regimes.

3. **Support shared-access to multidisciplinary data spanning environments, timescales, treatments, and management to encourage proper scaling the effectiveness and impact of conservation practices and systems.**

- Conservation practice effectiveness data are region-specific, variable within and across location and year, crop dependent, and influenced by study scale.
- Critical research questions around agriculture, climate, and sustainability have become increasingly complex and require a coordinated, multifaceted approach for developing new knowledge and understanding.

4. **Build regional and local technical assistance capacity to ensure that federal and state conservation programs and initiatives are successful and that implemented practices are properly sited, designed, installed, and maintained.**

- Adequate and consistent funding to support NRCS field staff and build local capacity of soil and water conservation professionals is critical to the successful advancement and long-term effectiveness of conservation implementation.
- Public-private partnerships for providing technical service and outreach can be an efficient way to promote use of conservation programs and practices, reducing turnaround times from program enrollment to project implementation.

5. **Establish or support farmer-led groups to collaborate with conservation representatives to increase awareness of relevant environmental issues, share experience on conservation management, and build trusted relationships.**

- Conservation program success is dependent upon landowners willing and able to implement conservation or nutrient management.
- Farmer familiarity with regional environmental goals and efforts has the largest impact on conservation adoption.
- Farmer-led initiative at the county or small watershed scale often result in conservation practice adoption via financial incentives that cost less than traditional USDA programs.
- Non-operating landowners (NOLs; who own approximately 40% of US farmland) are often unaware of conservation practice incentives and benefits; these properties have lower adoption of conservation than owner-operated properties.

In addition to the five focus areas highlighted above, we offer the following insights from our on-the-ground experience transferring research to the farm.

Overcome Barriers to Adoption

There are approximately 180 NRCS-approved conservation practice standards available. Three essential factors contributing to the decision-making process of farmers and ranchers on whether to adopt nutrient management and conservation practices into their farm operations are: 1) information and awareness, 2) economic drivers, and 3) social norms (Liu, Bruins and Heberling, 2018).

Unless an innovation that the USDA invests in is relevant and has value to the farmer or rancher, it will likely receive little traction among land owners or operators; and therefore, may have minimal effect on reducing the agricultural footprint. For example, in reviewing the adoption of precision agriculture technology, Global Navigation Satellite Systems (GNSS) guidance and associated technologies have become standard practice for mechanized agriculture; whereas Variable Rate Technology (VRT) was one of the first precision agriculture applications introduced in the early 1990s, but rarely exceeds regional farm adoption greater than 20% (Lowenberg-DeBoer and Erickson, 2019).

On the other hand, over 90% of U.S. corn, cotton, and soybean acreage is planted with genetically engineered seeds that were first approved in the mid-1990s (USDA, 2018). This innovation developed by a private company, has allowed U.S. farmers to increase productivity more efficiently, thereby obligating fewer acres to cropping costs. Investing in partnerships will help capture this same ingenuity with conservation and lead to an approach that will be better accepted by landowners and operators.

Prioritize Systems Thinking

If conservation innovation focuses only on genetic improvements to our current primary commodities (i.e. corn and soybean), without considering options that look at the farm or ranch as a holistic system, we will have unrealistic expectations. Reducing agriculture's environmental footprint requires forward thinking innovation that supports wider adoption of alternative, less intensive practices and crops. This does not imply that we need to reduce our commodity crop acreage, rather it supports the urgency for integrating diversity into our rotations that will also enhance productivity.

Farmers want to see improvements in their crops and their profit margin to justify the adoption of a different practice, especially if it requires the purchase of new equipment. As new genomes or alternative crops are developed, farmers must have a way to incorporate these novel seeds into their fields. This not only includes access to the proper equipment, but also knowledge on the practice or the new crop, and experience or trust in someone they can consult with questions and advise. Additionally, to incorporate a new crop into a rotation, there must be regional access to a processing facility and a market demand for the product.

The average age of all U.S. farmers in 2017 was 57.5 years (USDA, 2019). For the many farmers nearing retirement, purchasing new equipment for conservation practice adoption (especially when equipment that will need to be sold or decommissioned in the process of adopting the new practice or management system is still being paid off) or learning a new technology or management skill is a low priority (Prokopy et al., 2014). Further, historically underserved producers with limited-resources often operate on more environmentally sensitive land and are more likely to farm closer to impaired or sensitive water bodies (Nickerson & Hand, 2009). To reduce up-front risk of the initial investment required to implement less intensive crops or adopt more sustainable land management practices, subsidy programs to support regional equipment rental must be developed to encourage adoption and remove barriers, but they should also incorporate the use of machine operators to run and maintain the equipment.

Embrace Local Messengers

Agricultural innovation must consider how short-term management decisions integrate with long-term planning such that crop production and profitability enhance rather than compete with environmental objectives (CAST, 2019). Although USDA research is conducted at national laboratories on field plots, the delivery of project results or program outcomes to the farming public and integration into regional agricultural conservation system delivery must focus on local priorities and demographics. Partnerships to enhance communication of farmer needs and social constraints throughout project development are essential to producing meaningful and actionable outcomes. USDA employees in local field offices have daily contact with farmers and ranchers. These public servants should be targeted and utilized as resources to vet project concepts, beta-test models and tools, and compare outcomes with local observation. A research framework that encourages multi-level agency feedback, together with input from industry partners will help identify feasible solutions and practical research better aligning productivity targets while meeting environmental goals.

Agency field offices and industry partners must serve as critical partners in order to affect communication and message delivery when it is time to execute improved project results across the landscape. To ensure that adoption of new innovation on the landscape continues to meet environmental expectations, farmers and ranchers will need ongoing technical assistance and outreach that extends beyond practice implementation to support proper maintenance and management.

For an innovative practice or cropping system to gain recognition and acceptance across a region, representatives from organizations engaged in long-term outreach must understand the science behind the practice and have confidence that it is practical to integrate into large-scale, farm management systems. Engaging these groups in discussions throughout the entire process of project development as part of technical advisory teams can encourage acceptance and promotion when the technology is publicly launched.

Thank you for the opportunity to submit comments. We recognize the arduous challenge of meeting agricultural productivity goals while reducing by 50% the environmental footprint. In closing, for the outcome of any innovative research to gain traction and widespread acceptance, the functionality of the practice, crop, or approach must seamlessly integrate into the current farm system and supply chain infrastructure with minimal disruption in management. Collaborative and interdisciplinary partnerships with consistent dialogue throughout the research process will be critical to unearthing these solutions and reducing barriers to adoption.

Kind Regards,

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