



CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

Ms. Sara del Fierro
NRCS Climate Office
Washington, D.C. 20250

Submitted via regulations.gov

December 20, 2024

Re: Request for Public Input About Implementation of the Conservation Practices To Support Climate Change Mitigation and Adaptation: NRCS-2024-0015

Dear Ms. Sara del Fierro:

CBF is a 501(c)(3) non-profit organization, founded in 1967. The organization's mission -- carried out from offices in Maryland, Virginia, and Pennsylvania-- is to restore and protect the ecological health of the Chesapeake Bay, the nation's largest and most productive estuary. CBF has a long history of partnering with the U.S. Department of Agriculture (USDA) and working directly with agricultural producers to implement conservation practices. We have provided technical assistance to thousands of willing landowners in stream, wetland, and upland habitat restoration, often by leveraging the Conservation Reserve Enhancement Program with state and private dollars. We have catalyzed interest in the implementation of innovative agricultural approaches, many of which also help reduce agricultural greenhouse gases, including variable rate nutrient application and rotational grazing. CBF has served as the lead on several Regional Conservation Partnership Program (RCPP) and Conservation Innovation Grant (CIG) projects focused on the implementation of soil health and rotational grazing practices, offered input on State Technical Committees, and provided technical assistance for establishing grazing practices and forested riparian buffers. Our work has helped farms to sequester carbon, reduce emissions, and increase resilience to extreme weather events.

We sincerely appreciate USDA's interest and leadership in advancing climate-smart agricultural and forestry practices, and in ensuring the most up-to-date science and on-the-ground knowledge can enhance these efforts. Agricultural producers can play a critical role, in the near-term, to reduce greenhouse gases

(GHG) and sequester carbon, while long-term solutions like increasing renewable energy, are advanced.

We are pleased to see, and are supportive of, Natural Resources Conservation Service's (NRCS) commitment to assisting producers in building climate adaption and resiliency into their practices through improvement of Conservation Practice Standards (CPS), and in response to the Request for Public Input¹, offer the following responses to the provided questions:

What changes are needed to CPS to add flexibility or support implementation options to provide mitigation benefits?

We recommend that NRCS introduce mechanisms to evaluate and fast-track innovative conservation practices that demonstrate significant mitigation potential. Climate change impacts are accelerating, and agricultural systems must be able to adapt quickly. Prioritizing innovative practices allows for producers to adopt effective solutions in a timelier manner. Broadening incentives for innovative practices might also encourage innovation among farmers to develop and implement more climate smart practices.

Specifically, for Waste Storage Facilities², CBF advocates that NRCS focuses funding on composting and solid or bedded-pack systems, which are both less costly and have lower GHG emissions. Liquid storage facilities alone, without coverage, gas capture, and methane reduction, do not provide any climate mitigation or adaptation benefit, are very costly, and result in significant emissions of methane, nitrous oxide, and other GHGs. Additionally, the increasing frequency of extreme storms is likely to lead to increased spills or breaches of liquid storage facilities, with widespread environmental impacts. Solid or dry manure, especially when in a roofed structure, is much less vulnerable to extreme weather and poses less risk of environmental harm.

What changes are needed to CPS to add flexibility or support implementation options in a way that considers potential climate change impacts and provides adaptation benefits?

¹ 89 Fed. Reg. 88719. (Nov. 8, 2024)

² CPS 313 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

NRCS needs to prioritize and promote regenerative agriculture—holistic farming systems that not only help mitigate climate change and make farms more resilient to its effects, but also improve water quality, enhance ecosystem biodiversity, and produce nutrient dense food³. In addition, these farms are often more profitable than conventional farming systems⁴. Healthy soils are the foundation of regenerative agriculture.

Improved soil health can lead to higher crop yields, better forage quality, and reduced risk due to increased resiliency to pests, extreme temperature fluctuations, drought or floods⁵. Healthy soils with high organic matter, microbial life, and living roots have more nutrients available in the soil and are more resilient to extreme weather with temperature moderation, and improved water infiltration to reduce runoff in torrential rains or sustain moisture during droughts. Living roots can scavenge nutrients from deep soil layers and bring them near the surface to be available for later use and reduce leaching to groundwater. Thriving microbial life in the soil mineralizes nutrients into crop-available forms, so there is less need for synthetic fertilizers, which have high GHG emissions in their production, transport, and application. Cost-savings from reduced use of livestock feed, synthetic fertilizers, herbicides, insecticides, and antibiotics can also have a positive impact on farm profitability. We offer specific suggestions on the following practices:

Nutrient Management⁶

NRCS should focus on indicators of soil health, including high levels of microbial activity, to increase crop-available nutrients, through the following:

- Greater reliance on manure, compost, and other organic nutrient sources to improve soil organic carbon⁷
- Variable rate application to optimize efficiency and reduce use of petroleum-derived products that contribute to GHG emissions.

³ Emily Rehberger *et al* 2023 *Environ. Res. Commun.* **5** 052001 (<https://doi.org/10.1088/2515-7620/acd6dc>)

⁴ LaCanne CE, Lundgren JG. 2018. Regenerative agriculture: merging farming and natural resource conservation profitably. *PeerJ* **6**:e4428 <https://doi.org/10.7717/peerj.4428>

⁵ Teng, J., Hou, R., Dungait, J.A.J. *et al.* Conservation agriculture improves soil health and sustains crop yields after long-term warming. *Nat Commun* **15**, 8785 (2024). <https://doi.org/10.1038/s41467-024-53169-6>

⁶ CPS 590 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

⁷ Hiranmai, R., Neeraj, A., & Vats, P. (2023). Improvement of soil health and crop production through utilization of organic wastes: A sustainable approach. *International Journal of Recycling of Organic Waste in Agriculture*, **13**(1). <https://doi.org/10.57647/j.ijrowa.2024.1301.01>

- Apply nutrients with minimal disturbance to maintain soil structure.
- Account for nitrogen from soil organic matter and cover crop residues when determining N application rates, such as with Penn State University's Nitrogen Recommendation Tool⁸.
- Meet majority of nitrogen requirements with slow-release organic forms such as compost or legumes, such as in cover crop mixes.

Livestock

NRCS should prioritize and support pasture-based livestock production with perennial forages, by increasing support for practices such as Prescribed Grazing⁹, Tree-Shrub Establishment,¹⁰ and Silvopasture¹¹. NRCS could improve their ranking in allocation of program funds and increase payment rates for these practices. These practices can increase profitability, improve soil health, increase farm resilience to severe weather, and sequester carbon, as shown in the NRCS Innovation Grant funded project entitled *Promoting Rotational Grazing in the Chesapeake Bay Watershed and Quantifying the Economic and Environmental Benefits*, which increased adoption of rotational grazing and quantified the benefits in the six case studies¹². NRCS must commit to continue increasing implementation of these practices and quantifying their benefits to ease farmer decision-making.

Silvopasture¹³

Silvopasture both sequesters carbon and helps increase resilience to extreme weather. Trees planted provide shade for livestock during the summer and windbreaks in the winter to improve livestock weight gain, milk production, and conception rates. Trees help mitigate some of the impacts of extreme weather by holding soil in place during heavy rain and helping to retain moisture in place to sustain production through droughts¹⁴.

⁸ [Nitrogen Recommendations for Corn That Credit Cover Crops and Soil Organic Matter](#)

⁹ CPS 528 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

¹⁰ CPS 612 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

¹¹ CPS 381 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

¹² [report_grazing-case-study.pdf](#)

¹³ CPS 381 ([Climate-Smart Agriculture and Forestry \(CSAF\) Mitigation Activities List for FY2025](#))

¹⁴ [Final report for LNE20-405R - SARE Grant Management System](#)

Silvopasture’s potential to mitigate climate change is recognized worldwide, and is the top agricultural practice recommended by the authors of Project Drawdown¹⁵:

“Silvopasture is the highest ranked of all of Project Drawdown's agricultural solutions in terms of mitigation impact, though it has received little attention. It should be a priority for scaling up wherever grasslands are humid enough to permit tree growth. This is particularly important given the need to produce climate-friendly livestock products to meet global demand for meat and dairy.”

In the Mid-Atlantic region, CBF supports silvopasture when appropriate trees are added to existing pasture or cropland, with protections for trees against livestock and/or wildlife damage, and for riparian areas or areas that might not be suited for grazing.

NRCS currently does not support silvopasture in Pennsylvania through the Environmental Quality Incentive Program,¹⁶ although many farms have been adopting this practice successfully, in the rare cases when they could do so without EQIP’s financial and technical assistance. They have added trees to existing pastures, improved their grazing plans, and experienced multiple conservation and farm-viability benefits. NRCS support and federal funding would greatly increase adoption of silvopasture adoption, with benefits to increase resilience to climate change impacts.

What additional technical guidance should NRCS provide to support planning, designing and implementing the CPS to ensure consideration of climate change impacts and maximize adaptation?

To maximize climate impact, a better understanding of carbon sequestration potential of each practice is needed. NRCS should quantify carbon sequestration potential of conservation practices. Eddy Flux Covariance systems¹⁷ are a technological opportunity to demonstrate changes in greenhouse gas emissions

¹⁵ [Silvopasture | Project Drawdown](#)

¹⁶ USDA’s [Field Office Technical Guide in Pennsylvania](#) has no Conservation Practice Standard for Silvopasture (381) like there is for other states.

¹⁷ [Eddy Covariance Systems | LI-COR Environmental](#)

from different types of operations implementing a variety of practices¹⁸, and NRCS should pursue this and other emerging technologies to provide technical guidance for emission reductions on agricultural land.

What other innovative, economically viable ideas, technologies, or solutions are available to provide climate change mitigation or adaptation benefits that NRCS should consider for development of a new CPS?

Rainwater harvesting systems are an innovative and economically viable solution that NRCS should consider incorporating into a new CPS to enhance climate change mitigation and adaptation. These systems capture, store, and reuse rainwater, helping farmers manage water resources efficiently amid increasingly variable weather patterns. Rainwater harvesting systems boost drought resilience by providing a reliable water source during dry periods and mitigate flood risks by reducing surface runoff¹⁹.

In Baltimore City, urban farms like Plantation Park Heights²⁰ have utilized rainwater harvesting to build more resilient farms while also protecting the Chesapeake Bay from harmful urban runoff. The Water Quality, Outreach and Wellness Lab (WOW) at the University of Maryland²¹ is working with various farms in Maryland to explore the use of rainwater harvesting systems on vegetable farms with much success.

NRCS should prioritize regenerative farming methods to promote conservation practices with the greatest climate change mitigation and adaptation benefits.

The funding provided in the Inflation Reduction Act (IRA) for conservation programs is critical and must be preserved and utilized effectively. NRCS should prioritize practices such as raising livestock on pastures with perennial forage, silvopasture, and relying on organic nutrient sources to improve soil organic matter and microbial activity. Preserving Inflation Reduction Act funding and prioritizing climate-smart practices is critical to ensuring farmers have the

¹⁸ Wang Zhou, et al. Quantifying carbon budget, crop yields and their responses to environmental variability using the ecosys model for U.S. Midwestern agroecosystems, *Agricultural and Forest Meteorology*, Volume 307, 2021, <https://doi.org/10.1016/j.agrformet.2021.108521>.

¹⁹ Pari L, Cozzolino L, Bergonzoli S. Rainwater: Harvesting and Storage through a Flexible Storage System to Enhance Agricultural Resilience. *Agriculture*. 2023; 13(12):2289. <https://doi.org/10.3390/agriculture13122289>

²⁰ [Maryland Today | How to Get Urban Farms Flowing in the Right...](#)

²¹ [Water Quality, Outreach and Wellness \(WOW\) Laboratory | University of Maryland | School of Public Health](#)

necessary resources to protect their farms from climate change, enhance soil and water quality, and reap the cost savings these practices make possible.

We are thankful for the opportunity to weigh in on NRCS's improvement of the Conservation Practice Standards and look forward to continuing the work to maximize the climate benefits of agricultural conservation practices.

Sincerely,

A handwritten signature in black ink, appearing to read "Jenna Schueler". The signature is fluid and cursive, with the first name "Jenna" written in a larger, more prominent script than the last name "Schueler".

Jenna Schueler
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