

November 1, 2021

Docket: USDA-2021-0010

Request for Comments: USDA/Commodity Credit Corporation Request for Public Comments on the Climate-Smart Agriculture and Forestry Partnership Program

About Land Core

[Land Core](#) is pleased to provide input jointly with OpenTEAM on USDA's climate-smart agriculture and forestry (CSAF) strategy. Land Core is a 501(c)3 organization with a mission to advance soil health policies and programs that create value for farmers, businesses and communities. The organization is building the missing infrastructure and market-based incentives that will make the rapid adoption and scalability of soil health possible.

Land Core works closely with the USDA, legislators, producers, soil scientists, NGOs and financial institutions across the country to develop federal policy recommendations that promote healthy soils, resilient, profitable farms and national food security.

The organization's policy work includes building a broad coalition of support for soil health and helping to secure over \$50M in funding for the Soil Health Demonstration Trials in the 2018 Farm Bill, providing technical recommendations to NRCS, and guiding the successful passage of language in both the House and Senate supporting soil health outcomes at USDA in the FY20 Appropriations legislation, and supporting the inclusion of climate-smart agriculture in the Build Back Better budget reconciliation package.

These comments are also based on Land Core's work building a predictive model of the risk-mitigating benefits of soil health practices, designed as a tool to inform and support lenders and insurers (and the private sector, more broadly) in incentivizing climate-smart agriculture.

About OpenTEAM

[OpenTEAM](#), an initiative facilitated by Wolfe's Neck Center for Agriculture & the Environment, appreciates this opportunity to provide input to USDA on how a CSAF strategy can expand climate-smart practices on the ground. OpenTEAM, or Open Technology Ecosystem for Agricultural Management, is a farmer-driven, interoperable suite of tools that provide farmers around the world with the best possible knowledge to improve soil health. OpenTEAM also offers field-level carbon measurement, digital management records, remote sensing, predictive analytics, and input and economic management decision support in a connected technology toolkit that reduces the need for farmer data entry. The OpenTEAM tech ecosystem supports adaptive soil health management for farms of all scales, geographies and production systems.

OpenTEAM's contributions to these comments are based on input and learnings from its community membership, which includes over 45 organizations and 250 researchers, developers, and producers. In general these comments represent the perspective of OpenTEAM, but it is not intended to be a consensus document that represents the views of all members. The comments on equity and environmental justice were developed with specific input from OpenTEAM's Equity working group.

Members of OpenTEAM include General Mills; Stonyfield Organic; Colorado State University/USDA-NRCS Comet Farm; Ecosystem Services Market Consortium; Applied GeoSolutions, LLC; DNDC Applications, Research and Training; Dagan, Inc.; Mad Agriculture; Michigan State University Global Change Learning Lab; Purdue University Open Technology and Systems Center (OATS); Quivira Coalition; University of British Columbia Center for Sustainable Food Systems; ReGen Network; Our Sci; Quick Carbon at Yale School of Forestry and Environmental Sciences; U.S. Cover Crop Council decision tools; Sustainability Innovation Lab at the University of Colorado Boulder (SILC); LandPKS (led by USDA-ARS); Million Acre Challenge; Pasa; Caney Fork Farms; Paicines Ranch; Heartland Science and Technology Group; FarmOS; Organic Valley; Rhode Island School of Design; PastureMap; Open Rivers; Terra Ethics; Field to Market Alliance; Lite Farm; Foundation for Food and Agriculture Research; LiteFarm; Tech Matters; Digital Green; Hyllo; Lexicon of Sustainability; and Terra Genesis International.

An Opportunity to Build a Resilient, Regenerative, Carbon Negative Agriculture System

We welcome USDA's leadership and continued commitment to advancing a resilient and climate-smart agriculture system, and applaud the comprehensive strategy as laid out in the Department's CSAF Strategy: 90-Day [Progress Report](#) and referenced in the broader 2021 [Climate Adaptation Plan](#). This strategy represents a robust understanding of the challenges facing farmers and ranchers in adapting to, mitigating for, and actively combating climate change.

Through CSAF strategies, USDA has the opportunity to transform how we support our producers in their transition to a more resilient and regenerative agriculture system in the US. In particular, there is enormous opportunity to advance critical infrastructure for the scaled adoption of soil health practices—resulting in production agriculture that reduces risk to increasingly frequent and severe flood, drought and other stress events; and is more profitable and productive. This ultimately leads not only to net greenhouse gas (GHG) reduction and carbon sequestration but overall ecological regeneration. The CSAF Partnership Program recognizes the enormous economic and environmental potential of improved soil health and land management, as well as the vital role that USDA can play in providing meaningful pathways to enable US farmers, ranchers and foresters to access private sector capital and empower new market development.

However, the current CSAF strategy is focused heavily and narrowly on carbon and carbon-based markets. This narrow focus, on one element in a complex biological system, overlooks the full range of ecosystem service benefits that can be realized and limits economic opportunities. The goal should be to build a fully-functioning, resilient, biologically-focused agriculture system with an emphasis on soil health practices *that include* carbon sequestration and other GHG reductions. **We recommend that USDA expand its focus for all CSAF strategies to include a broader set of ecosystem benefits and outcomes**, including improving water and soil quality, biodiversity, overall resilience, and providing an array of economic benefits to producers.

Overview of Comments

The following comments will focus on agency-level actions USDA can take to: (1) support whole ecosystem function and create diverse economic opportunities for producers, (2) provide baseline soil health indicators and standardized monitoring, reporting and verification (MRV) protocols, (3) create a voluntary outcomes-based soil health program, (4) develop an integrated strategy for data collection, re-use, privacy, aggregation and security, (5) leverage and expand existing conservation programs, technical assistance and research, and (6) reach historically underserved producers. We invite questions and the opportunity to meet with USDA to expand on these recommendations.

1. Support approaches that focus on whole ecosystem function, build resilience and create diverse economic opportunities for producers

Responds to questions 2 (scope), 3 (eligible activities), 5 & 5a (potential criteria), 6 (practices)

When looking at “carbon sequestration”, USDA should focus on ensuring that the entire biological/ecological system that builds healthy (carbon rich) soil is taken into consideration, rather than looking at single outcomes (like soil carbon), which can potentially obscure the overall health of the ecosystem. Eligible project activities should focus on implementing practices that address soil health broadly, increase resilience, *and* address climate change.

All CSAF programs should adhere to USDA-NRCS’s “Soil Health Principles”, and consider designating a specific subset of conservation practices for eligibility, such as those set forth in the Climate Stewardship Act ([S.1072 / H.R.2820](#)). Incorporating new or evolving practices, such as holistic planned grazing, compost and other organic amendments, and agroforestry used in perennial production systems, as described in the Agriculture Resilience Act ([S.1337 / H.R.5861](#)) are also recommended. Additionally, a CSAF program should integrate and recognize Traditional Ecological Knowledge (TEK) practices and practitioners as eligible and equivalent to NRCS-recognized practices.

Responds to questions 8a (equitable partnership projects) and 8d (ensure benefits to producers)

Develop frameworks and programs that recognize and quantify the risk mitigation value (i.e. the associated savings) **of soil health practices**, to unlock much of the capital needed to fund the transition to soil health practices (and future carbon markets) without overreliance on government funding, and address some of the persistent issues regarding equity and access:

- Unlike carbon and ecosystem-services markets that are “pay for performance” in nature, “risk-mitigation” is reflected in rates that are given up front (i.e. a lower payment that leaves more money in the producers pocket for implementation of soil health practices).
- Any operation big enough to apply for a loan can benefit from risk-mitigation incentives, so all sizes of operations can take advantage of these opportunities.
- The risk-mitigation benefits of soil health (for example, increased water holding capacity and water infiltration rates) improve resilience across a broad range of regions and soil types (including where the carbon sequestration potential may be limited).
- Early soil health practice adopters can be rewarded now for the work they have already done, unlike under most current carbon markets schemes.

2. Provide USDA baseline soil health indicators and standardization of sampling and lab calibration protocols

Responds to 3c (activities that test and evaluate standardized protocols), 6a (potential criteria) & 6b (MRV requirements)

Establishing a consistent set of baseline standards for soil sampling and lab calibration is an essential tool USDA can provide to assist in the scaling of climate-smart practices and the development of ecosystem services markets, including carbon markets. As it relates to the verification and quantification of soil carbon sequestration and other ecosystem services, consistency at the national scale is essential. There are currently no USDA lab calibration standards (meaning that a soil sample sent to two different labs will get two separate results), nor USDA soil sampling protocols (standardized protocols with a geolocated, image verified, process for soil sample collection). Particularly as remote sensing, modeling and other tools and technologies evolve and emerge, we need to be able to verify outcomes consistently if we want to ensure viable market opportunities for US producers.

Recommendations for standardization of indicators, sampling and lab calibration protocols:

- Build on the “*The Recommended Soil Health Indicators and Associated Laboratory Procedures - Soil Health Technical Note No. 450-03*” to set an agency standard for a “minimum viable soil health indicator set”, in-field collection sampling methodology (including image verification and geolocation protocols), and lab calibration protocols, to ensure the consistency of soil health testing for those labs.
- Any specific protocols, methodologies, or standards should be science-based and reassessed biannually to ensure best practices are updated, given the continuing evolution of both technology and our understanding of soil health science.

Establishing consistent calibration and sampling protocols will not only build the infrastructure to facilitate the rapid development of carbon and ecosystem services markets, but also serve as critical infrastructure for academic, private sector and other government initiatives that are working to create additional kinds of economic incentives for producers implementing practices that reduce GHG emissions or sequester carbon on working lands.

3. Develop a Voluntary USDA-NRCS Outcomes-Verified Soil Health Program *Responds to questions 6c (types of systems to track participation), 8 (equitable, wide-ranging participation), 8a (early adopters) & 8d (benefits to producers)*

USDA has the authority to create a voluntary USDA-NRCS Outcomes-Verified Soil Health (OVSH) Program that gives producers a simple, standardized way of showing that they have an active soil health management plan in place that is improving their land, as verified by NRCS (or an authorized third party); gives companies and developing markets a trusted way of ensuring their supply chains or markets are meeting a baseline standard; and allows for a voluntary registry of all producers who are in good standing in the program to facilitate new market opportunities and assist in supply chain integration. See explanatory language in Land Core’s [OVSH Program memo](#).

4. Develop an Integrated Strategy for Data Collection, Re-Use, Privacy, Aggregation and Security

Responds to questions 6a (potential criteria) 6b (MRV requirements), 6c (tracking systems), 6d (data collection & analysis)

In order to overcome all the barriers mentioned in the request for information, an overarching, integrated strategy for data collection, re-use, privacy, aggregation, and security is required. **A data trust model and data interoperability should be the first priority for enabling some data standardization at USDA.** The ability for USDA to support the quantification, monitoring, reporting and verification of projects through CSAF at scale and through localized and regional comparisons will only become possible with this underlying digital infrastructure alignment. Furthermore, an integrated strategy for data interoperability creates a pathway for the inclusion of a wider variety of entities in eligibility for CSAF projects as it partially removes the burden of data management and strategy, and provides guidance to groups of producers or landowners applying for CSAF funding.

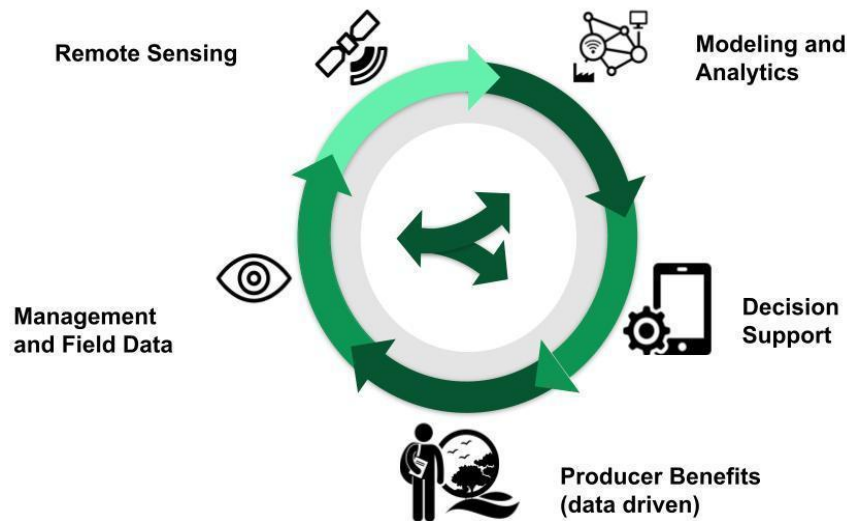


Fig 1. Data interoperability

Data collection, management, storage, and access methods should be standardized to address many of the barriers mentioned in the Request for Information, including standards for measurement, potential for double counting, high transaction costs and limited ability for small producer participation, to name a few. There is enormous value in sharing non-personally identifiable information and data across federal programs, and with other public and private stakeholders, including researchers and service providers, to address these barriers. The public and private sectors should work together to overcome current technical and contractual hurdles that inhibit data standardization, interoperability, and sharing, while protecting producer privacy.

While technology such as remote sensing, artificial intelligence, low-cost spectroscopy, drone imagery, internet of things sensors, precision agricultural data and environmental models have all rapidly increased in sophistication and accessibility, and lowered in cost, individual components of these technologies were not designed to function as a coherent ecosystem. Though different systems and models require different inputs, it is possible to **develop standards and systems that allow data to be entered once by a single party, yet harnessed by multiple parties for varied use cases**. For the CSAF Partnership Program to function well, inter-agency and public-private standards governance is critical. A planned standards development process at the beginning of the CSAF rollout should include facilitated exchange during the design process and incorporate the full and evolving technology ecosystem.

In addition to these technical and informational benefits, **reduced data entry and development of standards for farm and ranch data portability will result in lower error, lower cost, higher utility, less frustration, more collaboration, and more efficiency**. Current models of data collection all involve producers or agencies entering data into a system owned and operated by a central agency or service provider. If producers want to access these data, they need to navigate these disparate, and often complex, systems. Another layer of complexity is added if the producer then wants to forward-share these data for other use cases.

The CSAF program should maximize the efficiency of producer-level data collection by streamlining the flow of data collected across federal conservation programs and with eligible entities seeking CSAF funding. By creating a producer controlled “Data Wallet”, farm data collected should be treated as confidential but farms should be given the option to make this data available to whomever they choose, including CSAF-eligible entities, researchers, or other governmental agencies that use them for generating Conservation Activity Plans, economic decision support, National Ag Statistics Survey responses, program applications and certifications, and other uses.

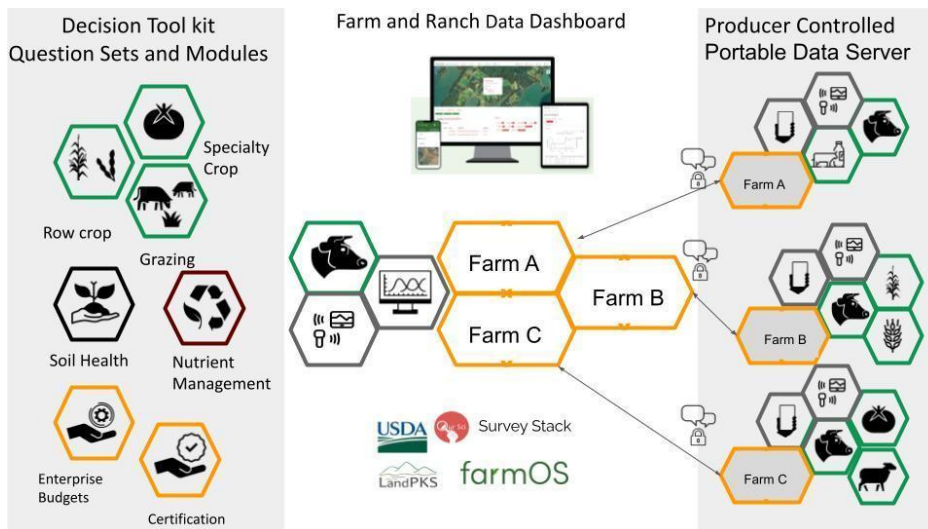


Fig. 2 Data wallet specs

In order to ensure data collection is fair and equitable, **the technologies employed should facilitate participation by all producers regardless of operation type or scale**, and producers should have a mechanism to influence the use of emerging technologies. New and emerging technologies will ultimately enable the scaling of site specific decision support tools that identify the best opportunities for reducing emissions, increasing soil carbon sequestration, and monitoring the results of these activities over time.

Trusted Data and Standards Processes

Responds to question 3c (standardized protocols) & 6c (MRV requirements)

Paramount to the success of trusted data models that enable data interoperability is the ability to **confidentially store data and ensure the privacy of land stewards' personally identifiable information**, which is a key step to the creation of authoritative data sets and of high importance for any MRV requirements of CSAF. Creating uniform data standards and a versioning process for those standards is necessary to achieve this goal, as is education for producers about agricultural data control. USDA is uniquely positioned to outline and implement a standards structure and a versioning process for grower and agronomic data.

USDA should **create a dynamic authoritative data-as-a-service structure to support the integration and access to publicly accessible soils, water, climate and agricultural practice data** contributed to by both public and private sources. This database and hosting structure is crucial to calibrate and validate current and next generation observation tools and models used to validate and lower the cost and increase the accessibility of soil carbon and GHG emission measurements. Measurement calibration will ultimately bring science-based clarity to help define climate-smart commodities for the CSAF program.

USDA should **support an expansion pathway for the authoritative data set to become dynamic such that additional sites and modules can be added to update and improve the dataset over time**. This system would build on the ARS/LTAR Long Term Research sites, but with an explicit purpose to curate an authoritative data set that can be referenced by academic and other users to calibrate and validate new tools to reduce costs of measurement, agronomic recommendations and that is necessary to support confidence in public and private marketplace claims.

Data commons should be hosted in machine readable formats accessible through APIs and tiered access services for secondary uses according to "FAIR Guiding Principles for scientific data management and stewardship." The digital tools which are required to make agricultural data useful for farmers and ranchers should also be published as open-source code in conjunction with the data sets, if not provided as a cloud-based service

directly. **Efforts to create a digital system should be done in collaboration with existing entities** that are supporting similar efforts. Incorporating additional research institutions with open data repositories that interoperate with existing open-source software, hardware, and remote sensing technologies in a shared data structure with USDA will support monitoring, reporting and verification of CSAF practices and producer-specific recommendations, as well as facilitate the voluntary contribution of high quality, high resolution data into USDA repositories. This will also reduce the cost of these services significantly to the USDA, while aligning the repositories and technologies available to those within the CSAF program.

Environmental Claims Clearinghouse

As the agricultural sustainability space continues to strengthen and public and private ecological services markets begin to take shape, an emerging and timely opportunity to explore is the concept of **a pre-competitive public infrastructure and utility service** around data, claims, credits and land tenure registry services. Such a registry would address facets such as time, place, and privacy, and sharing requirements, data providence, and even global nested account requirements.

As part of the CSAF program, USDA should explore the establishment and long-term funding of **a non-federally governed environmental claims clearinghouse** to enable review of stacked environmental claims made by diverse public and private marketplaces and incentive programs. The clearinghouse would clear potentially conflicting contracts and claims across field boundaries and contract terms and should be governed by a diverse board overseeing and assuring the integrity of the service. This is important to assure practice additionality, data integrity and interoperability, and to prevent double counting in environmental claims markets. If USDA is also leading a data standards and versioning process, this will provide stability and confidence that would increase confidence in complementary markets to enable the “stacking” of benefits, without the double counting or issues of “additionality” within USDA programs.

5. Leverage existing infrastructure and conservation programs, and expand technical assistance

Responds to questions 3 & 3b (project activities, grants, loans, etc.)

The voluntary conservation programs administered by USDA are fundamentally important tools for expanding the adoption of climate mitigation and adaptation practices, alongside practices that support the delivery of other ecosystem services from farms. Since the CSAF Partnership Program [intends](#) to “support a set of pilot projects that provide incentives to implement climate-smart conservation practices on working lands,” it must be acknowledged that **voluntary USDA conservation programs already act as CSAF programs for working lands, with proven benefits in reducing GHGs and supporting producers** in building soil health and resilience. All CSAF strategies should leverage these existing programs and seek to significantly expand enrollment in these programs (eg. EQIP, CSP, CRP) especially for bundles of practices that are included in a farm’s climate mitigation and adaptation plan.

As part of this, USDA should **increase the focus on “Adaptive Management” related practice codes and focus on continual improvement by creating a stronger link between the planning, management and the outcomes measurement and feedback process**. Payments for sets of practices associated with adaptive management activities in support of climate mitigation and adaptation should be increased to a level that creates a stronger, more adequate incentive for farmers to participate in the full adaptive management process. The conservation programs should provide direct and immediate economic and planning value to producers through short term planning and practices while creating longer term incentives to measure and share outcomes over time.

Responds to question 4 (eligible entities)

USDA should also **provide substantial and unprecedented levels of conservation technical assistance and educational support** (with a focus on the biological systems that build soil health and ecosystem services) to ensure farmers' efforts are successful, and partner with state and regional groups to help achieve this. The agency should regard the expansion and education of the technical assistance network as an investment in more efficient producer engagement in climate-smart activities. By leveraging community and place-based organizations and networks of trusted advisors, the agency can more efficiently reach and engage a wider and more diverse array of producers. By improving the quality of information and planning support delivered by the technical assistance network, USDA can better ensure that producers will see results from their activities and regard their investment of time and energy in these activities as worthwhile, supporting the longevity of benefits created for climate in the process. Technical service providers (TSPs) should focus on knowledge transfer and supporting adaptive management will support farmers in identifying climate-smart practices that are most compatible with their goals and the structure of their operation, and identifying solutions that can be most supportive of building overall farm profitability.

One of the most important things USDA can do to administer the CSAF Partnership Program appropriately with a variety of trusted technical assistants and advisors, where the benefits accrue to producers, is to advance data interoperability as discussed above. At OpenTEAM, our mantra is "enter data once, use it many times." This philosophy supports the most efficient pathway for producers to engage in climate smart activities, and we urge USDA to take this approach as well. To the extent that data collected in the course of a CSAF practice, organic certification, food safety certification, or other certification activities can also inform measurement and management of farm GHG emissions and soil health, this will maximize the efficiency of the farmer experience and allow farmers to realize the most benefits from all of these activities.

Maximizing the efficient, protected flow of producer data through data standardization and a data commons that supports individual ag data wallets will lower the investment of time and money on data collection for agencies, technical assistance networks and producers. Because of this, producers will be able to receive better agronomic, economic and soil health insights to adapt their management plans to support conservation and soil carbon sequestration.

USDA should ensure that the net investments into CSAF infrastructure support do not outweigh the investments in boots on the ground implementation of soil health practices and technical assistance, and incorporate conservation programs into all new strategies.

Responds to question 1 (state compliance) & 4 (eligible entities)

Additionally, with nearly 20 soil health programs passed or being passed in state legislatures around the country, and additional state-led incentives or public-private markets in development, the CSAF Partnership Program could play an important role in guiding and supporting these efforts. States should be eligible for funds, particularly for technical assistance and practice implementation, and would be able to draw on federally-created guidelines for eligible practices and MRV protocols.

Fund Research

Responds to question 3 (eligible activities), 4 (eligible entities)

USDA's considerable research capacity is an important asset to supporting agriculture and forestry with climate mitigation and adaptation. USDA should align the CSAF Program and data collected within it to **voluntarily share that data in support of research** in service of these goals. Priority should be given to research activities that take a whole systems approach to addressing climate mitigation and adaptation in concert with the delivery of other ecosystem services from an operation.

Considerable uncertainty still exists around the best methodologies, technologies and protocols for measuring and monitoring soil health, soil carbon, and GHG emissions from agriculture. USDA and its research agencies should take a leadership role in advancing knowledge and consensus in these areas. This will make it easier to provide more accurate guidance to producers on the practices they should be adopting. Increased confidence in these methodologies, tools, and protocols will also help to build support and trust for incentive programs or market mechanisms that reward producers for reducing GHG emissions and increasing carbon sequestration. As part of this, USDA should update the code for the COMET model to facilitate future module development and interoperability and comparison with other modeling approaches. This will support better quantification of emissions on more diverse operations - a necessity if USDA is going to be able to effectively support the full diversity of agriculture in climate mitigation and adaptation.

OpenTEAM's recommendations above on data interoperability in agency tools should be supported by research activities at the agency that focus on advancing the data conventions, structures, and versioning processes needed to enable data interoperability. This interoperability needs to be maintained and supported as models evolve and adapt in response to advances in research and technology.

USDA should build on the LTAR and CIG Soil Health Networks to create a dynamic authoritative data set of environmental, management, and economic data of 200 or more sites that represent all major climates, soil types and spans production systems and scales. This data set is crucial to calibrate and validate current and next generation observation tools and models used to validate soil carbon and GHG measurements.

6. Ensure benefits go to historically underserved producers

Responds to questions 8b (benefits to underserved producers) and 8c (benefits to underserved communities)

The struggle that BIPOC and socially disadvantaged producers have experienced over the last century with access to land and capital is well documented, and has resulted in BIPOC and socially disadvantaged producers representing less than two percent of the current population of principal farm operators. Tenant farmers, ranchers, and forestland managers are much less likely to be able to participate in emerging carbon and other ecosystem services markets, because the lack of land ownership makes it more difficult for them to invest in longer term conservation activities on the land they manage. To the extent that carbon markets require land managers to commit to the “permanence” of the credits being created, this requirement is impossible for tenant farmers to meet. Action must be taken to address market failures and racist practices within USDA that have resulted in lower rates of land ownership among socially disadvantaged operators. Further, unless USDA identifies strategies to encourage tenant operators to engage in climate smart practices and creates specific pathways for tenant operators to participate in carbon markets, these emerging markets are doomed to replicate the effects of systemic racism that are inherent in farm, ranch, and forestland ownership today.

We would like to highlight the following recommendations from Data for Progress' "[Land Access for Beginning and Disadvantaged Farmers](#)," first published in March of 2020, which identifies steps USDA can take to address some of the barriers to land ownership for BIPOC producers:

1. “Strengthen credit lending and land access rights for BIPOC and beginning farmers, as well as help meet marketing challenges faced by small farmers and rural communities (such as strengthening/establishing local Community-Supported Agriculture (CSA) networks between producers and consumers, and providing incentives for cooperative business development).
2. USDA should appoint a “land commission” to conduct a periodic national-scale participatory land tenure study every farm bill cycle, anchored by BIPOC community-based institutions. This will provide a holistic perspective on the socio-economic, political, and market-based factors limiting BIPOC access to land and equal land rights and provide policy recommendations on how to address these trends.

3. Expand FSA grant & loan guarantee programs for land acquisition for beginning and socially disadvantaged resident farmers under sustainable agriculture covenants; establish lending guidelines for SBA & private loans to low-income resident farmers and BIPOC-led farmer cooperatives.
4. Examine the role of heirs property in the loss of land for Black farmers, and offer education and technical assistance for families to retain property.”

In addition to directly addressing barriers to land ownership for BIPOC and socially disadvantaged operators, USDA should also establish strategies for engaging tenant operators in climate-smart practices. USDA should establish an outreach strategy focused on engaging tenant operators in climate smart practices, in partnership with community and place-based organizations. USDA should also assess the current level of BIPOC and socially disadvantaged tenant operator participation in programs and funding targeted at climate-smart activities, and set targets for increasing this level of participation on an annual basis.

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