



# Jumpstarting Large-Scale Soil Carbon Data Collection

Recommendations for the upcoming Farm Bill

## TITLE VII: RESEARCH

Good data makes all the difference. Better soil carbon data collection and management can equip farmers to make decisions about climate-friendly practices and pave the way for science-based carbon incentives.

Some of the most consequential innovations in America have been underpinned by publicly available federal data programs – everything from the navigational maps on our phones to agricultural models that identify production trends on US farms. But soil carbon data is disparate and unstandardized, hindering this level of innovation and decision-making on agricultural lands.

### SOIL CARBON DATA CHALLENGES

- Inconsistent sampling, measurement, and monitoring of soil carbon storage outcomes make it impossible to interpret data.
- Soil carbon data are collected only along short timespans, across few geographies, and from a small and a varying range of soil depths.
- Soil carbon data management efforts across federal agencies are disparate, unstandardized, and inaccessible.

### THE FARM BILL OPPORTUNITY

Unify and centralize soil carbon monitoring and data collection efforts at USDA and across the federal government in order to:

- Showcase areas with the greatest potential for agricultural soil carbon storage.
- Understand and communicate the outcomes of implementing soil carbon practices.
- Empower farmers and ranchers to adopt these practices.

*Launch a national Soil Carbon Monitoring Network (SCMN) to jumpstart large-scale soil carbon data collection and management.*

Data underpins industries big and small, including the US farming and ranching systems. Some of the most consequential datasets have been collected, maintained, and published by the US government over decades, spurring innovation and new economic opportunities. The federal government,

for example, created the geographic information systems to establish what we know today as GPS, enabling real-time maps on our phones and complex delivery logistics. Within the farming space, the US Department of Agriculture (USDA)'s soil and field datasets and the National Oceanic

and Atmospheric Administration’s weather data provide insight into crop yields, crop insurance, and risk year-over-year – the basis of modern agriculture.

Good data is standardized, accurate, and publicly available; it is also currently missing from the equation on soil carbon. USDA needs to take the lead in consolidating existing, inconsistent soil

carbon data, gathering new high-quality data, and creating new systems and standards to match – none of which is yet underway. Congress has the opportunity to kickstart a comprehensive, large-scale data collection and translation effort to empower farmers, ranchers, and policymakers to make science-based decisions about soil carbon through the following investments.

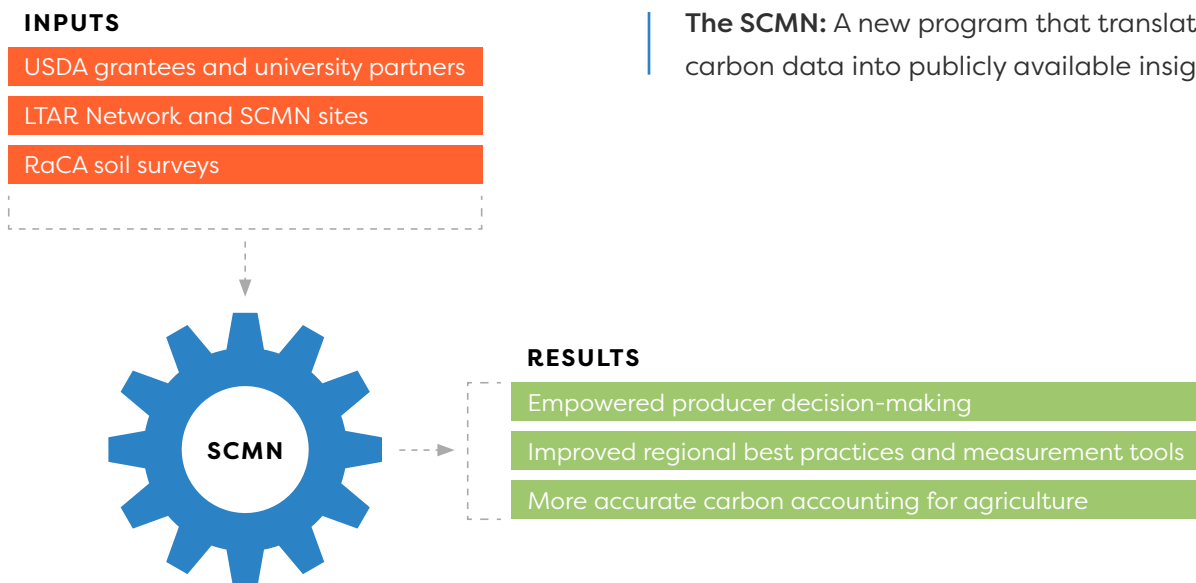
## The Soil Carbon Monitoring Network (SCMN)

Many existing programs at USDA already collect soil carbon data, but there is no dedicated program to centralize ongoing efforts and conduct large-scale analysis of that data collected. The SCMN can fill this gap and make soil carbon data actionable.

- **Create a SCMN** funded at \$60 million per year.
- **Direct the SCMN to collect, centralize, and**

**manage soil carbon data** from across USDA and translate them into high-level insights to support producer decision-making.

- **Direct the SCMN to create a network of research sites** in addition to the Long Term Agroecosystem (LTAR) Network to represent the geographic and operational diversity of US farms and ranches and effectively monitor soil carbon outcomes.



## The LTAR Network

The LTAR Network should serve as the primary source of long-term soil carbon data for the SCMN. Currently, the LTAR Network is made up of 18 research sites that coordinate research, collect and manage long-term data, develop new management techniques and technologies, and

pursue agricultural innovation partnerships. Expanding their efforts on long-term soil carbon research projects would enable a stronger scientific connection between practice changes and soil carbon outcomes across the full spectrum of US agriculture.

- **Formally authorize the LTAR Network** and provide an additional \$40 million per year.
- **Direct the LTAR Network to establish additional long-term soil carbon research projects** to collect and share soil carbon data and centralize it within the SCMN.

- **Direct the LTAR Network to create standard protocols** for soil carbon data collection to ensure uniformity across efforts.
- **Direct the LTAR Network to hire a dedicated data management team** to coordinate efforts across all LTAR Network and SCMN sites.

## RaCA

The Rapid Carbon Assessment (RaCA) is a NRCS project initiated in 2010 that aims to quantify US soil carbon stocks. RaCA can provide a benchmark to compare short- and long-term data from the LTAR Network and other programs, which helps us verify soil carbon outcomes and identify gaps in data collection efforts. However, RaCA has been conducted at inconsistent intervals and varying soil depths, limiting its potential to serve as a robust

soil carbon data benchmark. Congress can remediate this by authorizing RaCA and directing it to maintain a consistent and robust data collection program.

- **Formally authorize RaCA** under the SCMN.
- **Fund RaCA at \$15 million per year to conduct an annual national soil carbon assessment** with soil samples taken uniformly at 2 meters in depth.

## The Climate Hubs

Together, data from the LTAR Network, RaCA, and the SCMN can help farmers and ranchers make climate-informed land management decisions on the ground. But this data is only valuable if translated into actionable insights. That's where the Climate Hubs come in – to deliver science-based information and technology to land managers to help reduce agricultural risk in the face of climate change.

- **Formally authorize the Climate Hubs** and increase funding by \$5 million per year.
- **Direct the Climate Hubs to incorporate on-the-ground feedback from producers** into decision-support tools.
- **Direct the Climate Hubs to share key findings and actionable insights** from the SCMN with farmers and ranchers.

PROGRAM	2018 FARM BILL AUTHORIZATION	FY22 MANDATORY FUNDING	FY22 DISCRETIONARY FUNDING	RECOMMENDED ANNUAL FUNDING
SCMN (new)	N/A	N/A	N/A	\$60,000,000
RaCA	N/A	N/A	N/A	\$15,000,000
LTAR Network	N/A	N/A	\$17,000,000	\$57,000,000
Climate Hubs	N/A	N/A	\$23,326,000	\$28,000,000

Distributed evenly across sites

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