Momentum Ag

Healthy Soils Challenge Grant RFR

"Building a Community of Carbon Farmers in Massachusetts"

This document includes Attachments B and C.

Project Description

Momentum Ag and a group of thirteen MA farmers will partner with UMass Extension, CISA, and NOFA-MA to trial, document, and disseminate an exciting new perennial Clover Living Mulch System (CLMS) that offers significant carbon sequestration, soil health and climate adaptation/mitigation benefits as compared to traditional cover cropping.

This grassroots project officially launched in 2023 as a collaboration between ten MA farmers and Momentum Ag, with technical support from UMass, AFT, CISA, and others, and financial support from the Trienens Family Donor Advised Fund. The farmers successfully established clover and created guidelines for Best Management Practices (BMPs) for clover establishment at their recent winter meeting. The next phase of our project involves trialing cash crops in the established clover and disseminating results.

We sincerely hope that our grassroots, farmer-focused, action-oriented approach is a good match for the MA Soil Health Challenge Grant. This proposal would enable us to solidify and build on our early successes. Momentum's collaborative, farmer-led approach to research and innovation is unique in Massachusetts, and perhaps in the U.S. We believe that farmer-led and farmer-verified research is far more likely to drive farmer adoption than traditional university research.

Our proposal would (1) fund our farmers' 2024 trials with cash crops in their established clover, (2) add three additional farms to our network, (3) fund Momentum staff time to coordinate and collect data, and (4) disseminate findings to other MA growers through two farm tours (one sponsored by NOFA, and one by CISA), a CISA-sponsored webinar, and a presentation at NOFA's winter conference.

What is CLMS? Clover Living Mulch System.

Cabbage growing in clover. Sawyer Farm, Worthington, MA.

Clover provides physical, chemical, biological and management benefits.

Physical: covers the soil year-round, eliminating erosion, minimizing leaching, increasing infiltration and conserving moisture.

Chemical: sequesters carbon and fixes nitrogen.

Biological: feeds soil organisms year-round and provides pollinator and insect habitat.

Management: establishes easily, overwinters reliably, suppresses weeds, withstands traffic, minimizes planning, and is perennial.

Clover's perenniality drastically reduces tillage, leading to a virtuous cycle of soil health improvements across all metrics. (See Literature Review for details.)

Living Mulch is a term that refers to any living cover crop that is grown simultaneously with a cash crop. It functions as a mulch in the sense that it covers the ground and suppresses weeds, but it offers three key benefits over other types of mulch, like plastic, woodchips, compost, etc. (1) A living mulch is grown in place, eliminating the carbon footprint associated with trucking organic mulches or producing plastic. (2) A living mulch actively feeds above- and below-ground biodiversity with root exudates and nectar. (3) A living mulch actively sequesters carbon and increases SOC.

System. The ecosystem services of clover living mulches are very well-established (see Literature Review), but the agronomic practices needed to scale it *have never been studied on working farms.* Momentum Ag and our farmer-partners are doing this important work. Our farmers bring over 200 years of combined experience and over 1000 acres to bear on the critical questions: crop type and variety, fertility requirements, rotation considerations, and equipment modifications for successful implementation of CLMS.

What problems does CLMS seek to address? According to the USDA's 2017 Agricultural Census, only 10% of MA's cropland is cover cropped, almost entirely with winter rye. The Healthy Soils Action Plan (HSAP) has an in-depth discussion of barriers to cover crop adoption, based on national research, HSAP listening sessions, and a NOFA report. All of our farmers are cover cropping to some extent, but generally feel that "Annual cover crops are a perennial headache." Annual cover crops, especially for MA's diverse, high-value crop farms, require

burdensome time- and weather-dependent management and do not reliably perform or offer significant soil health benefits. It is critical to note here that these burdens only increase with climate-driven weather variability. Therefore, *climate change is likely to reduce rather than increase cover cropped acres in MA, unless we develop new climate-smart cover cropping strategies.*

Our farmers are motivated to take part in Momentum's trials because, relative to annual cover crops, CLMS is easier to manage, offers superior soil health benefits, and is more reliable under extreme weather conditions.

The photo below was taken at Four Corners Farm (Worthington, MA) after a heavy rainfall in early July, 2023.

Left: Recently transplanted cabbage in CLMS.

The clover breaks the impact of the raindrops, increases infiltration, slows or eliminates surface runoff, erosion, and nutrient loss, all while putting carbon into the soil.

Right: Recently transplanted cabbage in bare soil. Though this plot was seeded down to rye after harvest, the bare soil was vulnerable to erosion and nutrient leaching all season long.

SOC data from these two plots showed a marked divergence by the end of the season: 84 ppm in clover vs. 77 ppm in bare soil (Ward Labs Soil Health Assessment), and 2.21% SOC in clover vs. 2.05% in bare soil (Cornell Assessment of Soil Health).

Goals and Objectives

Our project's overarching goal is to demonstrate the SOC-building potential of CLMS on thirteen MA farms, develop a farmer-focused framework for BMPs in CLMS, and disseminate our findings to MA farmers.

1) Fund our existing network of ten MA farmers to compensate them for their time in implementing and documenting CLMS, and cover potential yield loss associated with implementing a new technique.
2) Fund an additional three farms to participate in trials, grow our network, and deepen data.
3) Use Momentum's proven farmer-focused system to coordinate farmers' efforts and collect data. See methodology.
4) Bring our partners' technical expertise to bear on farmers' specific questions and data collection protocols throughout the project. These partnerships include UMass Extension, CISA, and NOFA-MA in particular, as well as Momentum's existing partnerships with American Farmland Trust, UVM Extension, Iowa State University Extension, UWisconsin Extension, NCAT/AATRA, and the Rodale Institute.
5) Gather soil health data, and SOC data in particular, for control vs. experimental plots on each participating farm. See methodology.
6) Showcase CLMS at two farm tours, one sponsored by CISA in Western MA, and the other sponsored by NOFA-MA in Eastern MA.
7) Assemble BMPs in CLMS at Momentum's second annual winter meeting in December, 2024.
8) Summarize BMPs for other MA growers through a CISA-sponsored webinar in the winter of 2024/25, and at the NOFA-MA annual winter conference in 2025.

Specific areas where this Project will align with or advance the objectives of the HSAP

Our project addresses the following Healthy Soils Challenge Grant objectives:

a. **Promote Soil Health:** *To support demonstration type projects that document, prioritize and implement practices aimed at improving soil health and fertility.*

As noted, the ecosystem benefits of CLMS have been well documented. This project would implement CLMS on thirteen MA farms, and document SOC increases. See literature review.

b. **Sustainable Land Management:** *To encourage innovative approaches to sustainable land management that minimize environmental degradation, enhance biodiversity and/or restore degraded soil health.*

CLMS is innovative and manifestly minimizes degradation, enhances biodiversity and restores soil health. See literature review.

c. **Community Engagement:** *To foster community involvement and education in sustainable land practices and soil health improvement.*

Momentum has very successfully built a tight-knit community of highly engaged farmers; this project would help us build on that energy and add three more farms to our network. The partnerships with CISA and NOFA will help us reach many of the Commonwealth's farmers. CISA and Momentum have a strong track record with co-sponsored events – there were over 60 attendees at our 2023 farm tour, and over 50 attendees at our 2023 webinar.

Overall, implementation and promotion of CLMS addresses the primary goal of the HSAP: "The Healthy Soils Action Plan offers a single goal—no net loss of Soil Organic Carbon between 2021 and 2050." Agricultural land has lost between 25% and 75% of its soil carbon; putting atmospheric back in the soil – where it belongs – is critically important for soil health, climate mitigation, clean water, farm viability and food security for all of Massachusetts' residents.

Building a community of innovative farmers who collaborate on implementing, documenting and disseminating soil health practices will be a boon to Massachusetts in the short- and long-term.

Methodology

Momentum Ag's collaborative, farmer-led research methodologies have been developed through conversations and partnerships with technical advisors. The Practical Farmers of Iowa (PFI) has been facilitating farmer-led, on-farm research since 1987. Dr. Rue Genger (UWisconsin-Madison) has deep experience in collaborative varieties trials and "citizen science". Dr. Rachel Schattman, Sustainable Agriculture Professor at UMaine, runs collaborative cover cropping trials and has written extensively on farmer-led conservation and producer motivations. These organizations and individuals have provided technical assistance ranging from theoretical frameworks to practical google forms data collection templates, and will continue to do so.

Our farmers' efforts are supported, focused, documented and amplified by a Trials Coordinator. The Trials Coordinator supports each farmer in developing a trial plan and design consisting of six elements: 1) Key Questions, 2) Economic Risk Tolerance, 3) Equipment Plan, 4) Data Collection Plan, 5) Trial Plan, and 6) Timeline.

The Coordinator visits each farm twice during the growing season to get a sense of the full farm operation, see the experimental and control plots, and collect In-Field Soil Health Assessments.

Farmer communication is via text messaging. We very rarely ask farmers to respond to emails, schedule phone calls, or fill out forms. We respect their busy schedules. Text messages have proven to be frictionless, and the text thread itself becomes a shared narrative and data store.

The Trials Coordinator texts farmers ahead of each date identified in the Timeline as a reminder and to provide an opportunity for farmers to ask questions and review the plan, and follow-up texts to ensure the activity was completed and to gather data. The Coordinator requests before and after photographs for Timeline events and during check-ins; the result is a time-lapse series that is very useful to farmers in reconstructing the season, reflecting on the trial, and communicating results with a broader audience.

Post-season, the Coordinator supports farmers in using qualitative and quantitative data and photographs to develop a short Narrative Summary to present at Momentum's annual Winter Meeting and/or the CISA webinar and NOFA conference.

The Annual Winter Meeting is a critical component of the process. At our recent meeting, each farmer shared their brief Narrative Summary with the group and we generated BMPs for clover establishment. In 2024, we will repeat that very successful process and generate BMPs for cash crop production in CLMS.

Incentive payments are structured to motivate farmer engagement and to minimize financial outlay in case of farmer attrition.

Trial design. Trials are single comparison: CLMS vs. baseline management system (control). Our experience has been that farmer engagement and follow-through is significantly increased with a single comparison design, due to decreased demands on farmers' time. Paradoxically, replicates frequently lead to less valid, less reliable data because they are more difficult for

farmers to consistently track. Ultimately, the strength of our trials is the validity of aggregated data across thirteen farms.

Data collection is standardized across farms. Arthur Siller, UMass Extension's Soil Health Specialist, will assist farmers and Momentum's Trial Coordinator in adherence to standardized data collection methods.

Soil health will be assessed according to Open TEAM's Tier 2 protocols (described on page 72 of the HSAP).

1. In-Field Assessments. Trials Coordinators will carry out NRCS' In-Field Soil Health Assessments (IFSHA) on each farm on both control and experimental plots.
2. Laboratory Soil Health Assessments. Farmers will sample for baseline SOC at the beginning of the season, and sample both control and experimental plots at the end of the season. The Trials Coordinator will provide farmers with soil sampling protocols, soil sampling text reminders, and pre-paid shipping labels. Ward Laboratories' Soil Health Assessment is a fraction of the price of Cornell's test and farmers find its report more actionable. Ward Labs will test for the following:
    a) Soil Health Assessment. Includes soil organic carbon (ppm), aggregate stability (%), bioavailable nitrogen (mg/g dry weight), respiration (mg CO2/g dry weight) and active carbon (ppm).
    b) Chemical soil test. Includes pH, CEC, EC, organic matter, nitrate-N, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, zinc, and boron.
    c) Bulk density.

Expected Outcomes and/or deliverables

1) Quality data on SOC increases after implementing CLMS on real working farms in MA.

2) BMPs for cash crop production in CLMS that can be shared with the farming community state-wide.

3) Results shared and CLMS adoption encouraged through:

    - One farm tour to showcase CLMS in Eastern MA sponsored by NOFA,
    - One farm tour to showcase CLMS in Western MA sponsored by CISA,
    - One in-person winter meeting of Momentum's farmer partners, and staff from NOFA-MA, CISA, and UMass to share findings/develop BMPs,
    - One CISA-sponsored webinar to discuss findings/share BMPs with MA farmers,
    - One panel presentation at NOFA-MA's Winter Meeting to discuss findings/share BMPs with MA farmers.

Budget

See attached Excel Spreadsheet for the funding breakdown details.

Overall, the project will cost $109,443, of which $10,000 is in-kind, $30,630 is matching, and $68,812 is requested through the Healthy Soils Challenge Grant.

$33,000 of the requested amount goes directly to farmers, to fund their trials – both to compensate them for their time in implementing CLMS and collecting data, and to provide a cushion in case of yield loss. Farmers would receive half of the payment immediately if this project is funded, and half after all data has been collected.

An additional $2,000 is proposed for farms who participate in CLMS outreach. Two farms will host a field day ($500 each), $500 will be divided between farmers who participate in the NOFA-MA conference panel on CLMS, and $500 will be divided between farmers who present at CISA's CLMS webinar.

Two of the participating farms are opting out of the incentive payment, free soil testing, and outreach payments due to a potential conflict of interest. Lincoln Fishman is Momentum Ag's Trials Coordinator, and the owner of Sawyer Farm, so Sawyer Farm will decline payments. Four Corners Farm leases land to Sawyer Farm and they often collaborate on growing certain crops, so Four Corners will also decline payments.

Lincoln Fishman, Momentum's Trials Coordinator, will spend at least three days per week (60% FTE) on this project, collecting data, visiting farms, and organizing events. Momentum can cover one of those days (20% FTE), so we are applying for two days per week (40% FTE). Momentum will provide Lincoln's fringe and travel.

Arthur Siller anticipates spending 100 hours providing technical assistance and visiting farms in their role as UMass Extension's Soil Health Specialist, entirely in-kind.

The Soil Health Assessments from Ward Labs reflect bulk pricing. We can pre-pay Ward Labs for the season's tests (i.e., funds spent before June 30, 2024). Ward Labs will send us paid shipping labels and soil submission sheets that can be redeemed at any time. This reduces farmers' burden: with prepaid tests and shipping, farmers have no need to invoice Momentum Ag for reimbursement.

Momentum Ag will fund the Winter Meeting.

CISA is requesting $2,000 to develop, promote register attendees for the on-farm tour, and provide food for the event. CISA is requesting $1,300 to develop, promote and register attendees for the webinar. Please see the third tab of the Excel Budget "CISA budget breakdown".

NOFA-MA is requesting $1,044 to develop, promote, and attend the Eastern MA farm tour. Please see the second tab of the Excel Budget "NOFA budget breakdown".

Organizational Capacity

Momentum Ag was formed in 2023, but it is built on longstanding partnerships and collaborations that have enabled it to rack up significant accomplishments in its first season.

- Momentum coordinated seventeen trials nationwide (ten in MA, two in VT, one in CT, two in NY, one in MI, and one in IA). Farmer engagement is at 90%, and 80% of our farmers attended the in-person winter meeting. At the meeting, we used data collected throughout the 2023 season to identify and document BMPs for clover establishment.
- We have formed important partnerships with ag professionals and researchers at AFT, NOFA, CISA, UVM, UMass, UWisconsin, Iowa State, Practical Farmers of Iowa, and the Rodale Institute. ATTRA, a large, well-established national non-profit focused on agricultural sustainability, is committed to documenting and disseminating Momentum's work. See LOS. ATTRA is currently working on a four-part video series documenting CLMS, and will be posting our BMPs for clover establishment on their well-trafficked website. CLMS has also been featured in NOFA and CISA webinars, events, podcasts and publications. (Currently, most of this media focuses on Sawyer Farm's early CLMS efforts; forthcoming publications and videos showcase Momentum's efforts as a whole.)
- The Trienens Donor Advised Fund committed to the success of Momentum's vision of farmer-led research and dissemination to drive widespread adoption of climate-smart agriculture with a commitment of $100,000 annually for 10 years.

Key Personnel

Lincoln Fishman, Director and Trials Coordinator, Momentum Ag. Lincoln has been farming for over fifteen years. Lincoln's experiments with CLMS at Sawyer Farm, in Worthington, MA, led to many of the connections with the farmers and ag professionals who now form Momentum and its support network. Lincoln successfully coordinated seventeen trials in 2023, and oversaw Momentum's $150,000 budget. Lincoln has successfully led a $30,000 SARE Partnership Grant with UMass and AFT.

- Lincoln will be the lead on this grant, responsible for high-quality deliverables that are timely and within budget. Lincoln will support farmers' trials, and plan outreach/dissemination events.

Arthur Siller, UMass Extension Soil Health Specialist and PhD Candidate at Stockbridge School of Agriculture. Arthur has published on reductions in nitrate leaching in CLMS and has a deep knowledge of the system. This project would combine that expertise with Arthur's current outreach role as UMass' Soil Health Specialist.

- Arthur will work with Lincoln and Momentum's farmers to answer agronomic questions regarding CLMS, and ensure SOC and soil health data collection is standardized and valid.

Rubén Parrilla, Education Department and Technical Services Director for NOFA/Mass. Rubén is trained in microscopic soil microbial identification through the Soil Food Web School. He is a Certified Lab Tech and studied Environmental Design at the University of Puerto Rico. Rubén

has 15 years' experience working at different capacities in the environmental laboratory industry. He has been performing soil carbon proxy testing, soil health assessments, soil chemical analysis, and soil microbiological evaluations and has extensive experience farming and working with farmers, including beginning and socially disadvantaged farmers. Rubén performs soil health related outreach and education events for NOFA.

- Rubén will help plan and present at a CLMS/soil health focused field day in Eastern MA. Rubén will also consult on soil biodiversity measurements in CLMS trials.

Stephen Taranto is a Program Coordinator at CISA, focused on crafting CISA's initiative related to climate change and resilience in the face of dramatic social and ecological transition.

- Stephen will help plan a CLMS-focused soil health field day in Western MA, and a webinar in late 2024/early 2025 to present the season's findings to the public.

Our farmer-partners are from all over the state, represent a variety of farm sizes from three to 500 acres, and grow a diversity of crops.

Wally Czajkowski and Mike Zigmont, Plainville Farm, Hadley
Andrew Woodruff, Island Grown Initiative, Martha's Vineyard
Susanna Hilfer and Andy Andrews, Waltham Fields Community Farm, Waltham
Leah Jurman, New Entry Sustainable Farm, Beverly
Kaylee Brow, Book and Plow Farm, Amherst
Trip Shaw, Four Corners Farm, Worthington
Meghan Sudzinski, The Farm Lab, Chesterfield
Gideon Porth, Atlas Farm, Deerfield
Steve Barstow, Longview Farm, Amherst
Lincoln Fishman, Sawyer Farm, Worthington

- Momentum's farmer-partners will plan and implement CLMS trials, document and collect data, send soil samples to the lab, and meet to develop BMPs for CLMS. Two of our farmers (likely Atlas Farm in Western MA and Waltham Fields Community Farm in Eastern MA) will host field days. A number of our farmers will present at the CISA webinar and the NOFA-MA conference.

Project timeline

Upon award notification:

- Farmers will receive the first half of their payment.
- We will pre-pay Ward Labs for all soil tests.
- We will notify an additional three farms of their acceptance into Momentum's trials. (We accept applications on a rolling basis and would identify three farms from our current applicant pool.)

March – June 2023:

- Trials Coordinator will solidify trial design and plan with each individual farmer and ensure implementation and ongoing data collection through weekly texts.
- Farmers will implement CLMS and send a baseline soil sample to Ward Labs.
- Trials Coordinator and Arthur Siller will visit each farm.
- CISA will begin promoting its Western MA CLMS field day (likely at Atlas Farm in Deerfield).

$28,600 (>40%) of grant monies will be spent and expensed by June 30, 2024.

July 2024:

- Trials Coordinator will continue to monitor trials through weekly texts.
- CISA event will occur in late July.
- NOFA will begin promoting its Eastern MA CLMS field day (likely at Waltham Fields Community Farm in Waltham).

August 2024:

- Trials Coordinator will continue to monitor trials through weekly texts.
- Trials Coordinator and Arthur Siller will visit each farm and begin In-Field Soil Health Assessments.
- NOFA event will occur in late August.

September – November 2024:

- Trials Coordinator will continue to monitor trials through weekly texts.
- Trials Coordinator and Arthur Siller will visit each farm and complete In-Field Soil Health Assessments.
- Farmers will send CLMS and control samples to Ward Labs.

December 2024:

- Farmers will share and reflect on trials data and develop BMPs for CLMS at Momentum's Winter Meeting.
- Farmers will receive the second half of their incentive payment.

$61,000 (88%) of grant monies will be spent and expensed by December 31, 2024.

January 2025:

- A panel of Momentum's farmers will present on CLMS at NOFA-MA's winter conference.

February 2025:

- A panel of Momentum's farmers will present on CLMS through a CISA-sponsored webinar.

March – April 2025:

- Momentum will submit a final report including:
    - SOC results from our farmers' trials.
    - A detailed document outlining BMPs for CLMS.
    - Documentation of attendees at all events.
    - A project summary, including successes, challenges, and a roadmap for CLMS adoption by the Commonwealth's farmers.
    - Final reimbursement request and budget summary.

Project evaluation and monitoring

Performance metrics.

There are three key performance metrics.

1) Baseline, experimental and control SOC and soil health data from all participating farms. Baseline sampling in spring of 2024; experimental and control sampling in fall of 2024.

2) Community engagement, measured by documenting attendees at two field days, the NOFA-MA CLMS panel, and CISA's CLMS webinar. Ongoing from July, 2024 through February, 2025.

3) A farmer-focused document outlining BMPs in CLMS. Developed in December, 2024 and submitted no later than April, 2025.

Reporting.

Reports will be submitted every other month. These brief reports will:

1) Document progress to date.

2) Identify challenges as they arise, with proposed solutions/modifications.

3) Report on attendance at outreach events.

4) Document expenditures to date.

Our final report, submitted no later than April 31st, 2025, will include:

- SOC results from our farmers' trials.
- A detailed document outlining BMPs for CLMS.
- Documentation of attendees at all events.
- A project summary, including successes, challenges, and a roadmap for CLMS adoption by the Commonwealth's farmers.
- Final reimbursement request and budget summary.

Sustainability Plan

Post grant project sustainability assessment.

The goal of our project is document BMPs in CLMS, so that the practice – and its beneficial impact on SOC – can be adopted by the Commonwealth's farmers. At the moment, barriers to CLMS adoption include 1) the potential for yield loss before BMPs have been established, 2) the additional time required to gather data, and 3) lack of farmer outreach.

This project would address each barrier by compensating our farmer-partners for potential yield loss, time spent collecting data, and time spent in community outreach events.

Taken together, our farmers' trials would provide a roadmap for other farmers in the Commonwealth to follow. Our organizational partners at UMass Extension, CISA and NOFA-MA will continue to help spread the word to MA farmers.

With this funding, Momentum's farmer-partners will continue to build their community, generate data and ideas, and problem-solve together, leaving them substantially stronger in 2025.

This funding would open the door to even more significant funding streams in 2025 and beyond.

Once BMPs are established, NRCS has expressed an interest in bringing its substantial resources to bear through Adaptive Management Plans that would provide payments to MA farmers to implement CLMS. Adaptive Management Plans are far more likely to get funded if the practice has been widely trialed, successful strategies have been identified, and soil health benefits have been documented. The Healthy Soils funding could help unlock those NRCS monies.

Similarly, regional, federal funding and private funding is far easier to obtain once these practices and benefits have been established on working farms. Everybody likes to bet on a winning horse.

Momentum's farmers and aspiring CLMS adoptees would stand to gain tremendously from this Healthy Soils seed money, and we would be committed to leveraging that investment to drive CLMS adoption and additional investment into the future.

Partners involved and role.

See Key Personnel. Momentum Ag and its farmer-partners have established relationships with ag professionals at UMass Extension, CISA and NOFA-MA. This project would enable us to formalize and deepen those relationships. These organizations are all committed to continuing to work together into the future to build healthy soils in the Commonwealth.

Community engagement.

See Outcomes and Deliverables. Among other considerations, Momentum selects farmers who are influencers in their community. Through formal and informal channels, our farmers are

lynchpins in their communities. Our farmers will continue to work with one another, with Momentum, and with our organizational partners to drive CLMS adoption and climate-smart ag forward in their communities across the Commonwealth.

Risk Assessment for Project, partners, timeline

The primary risk involved in this project is the potential for yield loss (and attendant financial loss) for our farmer-partners. The incentive and outreach payments help mitigate this risk. The Trials Coordinator helps each farmer think through their potential losses and risk tolerance, so that financial risk remains within the boundaries of the incentive payment.

Farmer attrition is always a risk in on-farm trials research. Momentum's values and methodologies kept farmer engagement at extremely high levels – 90% -- despite one of the worst growing seasons on record. We will continue to strive for 100% engagement through careful selection of applicants, deep, flexible trials support, and meaningful trial design. In case of attrition, we will identify additional applicants to run trials and reallocate funds to them.

Finally, weather extremes are increasingly part of the agricultural landscape. If the 2024 growing season looks like 2023 (wet) or 2022 (dry), our ability to identify BMPs in CLMS will be necessarily limited. 2023's BMPs for clover establishment, for example, all come with a caveat: It was a historically wet year. This does not invalidate the results, but it does limit the breadth of their applicability. In terms of SOC, however, extreme weather events provide an opportunity to demonstrate the resilience of CLMS. Its ability to maintain and build SOC in extreme years is well worth documenting.