



# ORGANIC FARMING RESEARCH FOUNDATION

*Fostering the improvement and widespread adoption of organic farming.*

303 Potrero Street, Suite 29-201  
Santa Cruz, CA 95060  
April 28, 2021

Tom Vilsack, Secretary of Agriculture  
William Hohenstein, Director, USDA Office of Energy and Environmental Policy

RE: Docket No. 2021-0003

Dear Secretary Vilsack and Director Hohenstein:

Thank you for the opportunity to provide input and recommendations regarding USDA's climate strategy to be developed in response to President Biden's Executive Order on Tackling the Climate Crisis at Home and Abroad. We are encouraged and grateful that the USDA is taking a comprehensive approach to the climate challenge at this time, and is inviting input from a nationwide range of stakeholders in the food and agricultural system. On behalf of the Organic Farming Research Foundation (OFRF, <https://ofrf.org>), we would like to submit the following comments and recommendations.

OFRF works nationwide to foster the improvement and widespread adoption of organic farming systems through research, education, and federal policies that bring more farmers and acreage into organic production. The organic method, codified in 2002 in the USDA National Organic Program (NOP) Standards, places a high priority on building and maintaining healthy, living soils through crop rotations, cover crops, organic amendments, careful tillage and nutrient management, and exclusion of synthetic fertilizers and crop protection chemicals from the production system. Research has shown that integrated systems of best organic practices build soil health, reduce a farm's greenhouse gas (GHG) footprint by sequestering carbon and reducing GHG emissions, and enhance resilience to drought, flood, and other weather extremes related to climate change.

Since 2014, OFRF has conducted an extensive review of USDA-funded organic agriculture research and summarized key findings in a series of Guidebooks on Soil Health and Organic Farming (available at <https://ofrf.org/research/reports/>). As the impacts of climate change have emerged as a top priority concern for organic and other producers, OFRF has published a soil health guidebook on *Organic Practices for Climate Mitigation, Adaptation, and Carbon Sequestration* (2018, 78 pp), and a bulletin summarizing new research findings supporting *An Organic Approach to Increasing Resilience* (2020, 14 pp).

It is from this perspective that OFRF submits the following input on the USDA's response to the Biden Administration's Executive Order on climate action.

**We fully endorse the Recommendations on USDA's Climate-Smart Agriculture and Forestry Strategy submitted by the National Sustainable Agriculture Coalition (NSAC) in response to this request for public comment.**

As a member group of the NSAC, we have reviewed these Recommendations, which cover all sectors of agriculture including but not limited to organic. We find the NSAC recommendations highly relevant to the goals of climate mitigation and adaptation, and we urge USDA to adopt them in order to maximize and realize the full potential of US agriculture to become part of the solution to the climate crisis.

On behalf of the organic agricultural sector, we offer the following additional recommendations.

**Recognize and establish the organic method as a major strategy for carbon sequestration, greenhouse gas mitigation, and building resilience to the impacts of climate change.**

When the USDA first implemented the National Organic Program and Practice Standards for organic agriculture in 2002, this sector was treated primarily as a niche market opportunity to meet consumer demand for pesticide-free, non-GMO foods. However, extensive research funded through USDA as well as non-governmental sources has clearly demonstrated that organic is far more than a market niche, and in fact offers one of our most promising approaches to addressing the climate crisis in agriculture, as well as protecting soil and other resources.

The plant-soil microbiome, which co-evolved with the world's first land plants 450 million years ago, plays vital roles in soil and crop health, efficient nutrient cycling and utilization, soil structure and moisture retention, suppression of plant pathogens, and carbon sequestration. By excluding the use of synthetic crop protection chemicals and fertilizers, the organic method protects the soil life and plant-soil-microbe partnerships from chemical disturbances. In addition to sequestering carbon, a healthy soil microbiome greatly reduces the need for fertilizer N and curbs emissions of nitrous oxide (N<sub>2</sub>O) from agricultural soils, which account for half of US agriculture's direct GHG emissions.

Although non-use of herbicides often necessitates some tillage for weed control, recent and ongoing advances have given organic producers new tools and strategies to minimize tillage intensity and associated impacts on soil life. With its emphasis on soil health, biodiversity, and ecological balance, the organic method is known to build and maintain higher soil organic carbon (SOC) levels and better overall soil function than conventional systems including conventional no-till. In addition, multiple studies and extensive farmer experience have shown that organic systems and practices confer much greater resilience to drought, excessive rainfall, and other weather stresses related to climate change.

Therefore, we urge USDA to recognize the organic method as codified in the NOP Standards as a primary component of USDA's overall Climate Smart Agriculture and Forestry Strategy.

**Increase USDA research investment into organic agriculture to become *at least* commensurate with the organic food market share, currently about 6% of total food sales in the US.**

When the USDA first launched the NOP in 2002, the market share for organic foods in the US food system was very small. Since then, demand for organic food has risen exponentially, pushing the market share to about 6% of total food sales in 2020. Yet, USDA continues to invest less than 1% of its annual research budget in organic systems and practices. While NIFA Organic Research and Extension Initiative (OREI) funding has increased since the program's launch in 2004 and is slated to double in the next two years (to \$50M in 2023), annual funding for ARS intramural research on organic agriculture has actually declined from \$18M in 2005-06 to \$12M in 2014 and has remained at that level since.

While the organic method has great potential to contribute to both climate mitigation and climate resilience, much more research is needed to fully realize this potential. Priority topic areas include: nutrient management, optimum plant-soil-microbiome function, organic minimum-till, ecologically-based weed management that minimizes the need for cultivation, and development of regionally-adapted public crop cultivars and livestock breeds with enhanced resilience to climate change impacts. The lack of crop cultivars well suited for organic production systems is a major factor in the current 20% "yield gap" between organic and conventional production. Thus, classical and farmer-participatory plant breeding and selection conducted in the context of organically managed soils and farming systems will lead to better cultivars for the organic sector, with climate-adaptive traits such as enhanced partnering with soil microbes for nutrient efficiency, disease suppression, and stress resilience.

We welcome the growth in funding for both OREI and the Organic Transitions Program (ORG), and have been impressed with the high-quality products from OREI and ORG projects. However, these grants typically run for just three to four years, and their efficacy in generating new practical tools to help organic producers combat and cope with climate disruption would be significantly enhanced by a parallel investment in longer term research. This is where the Agriculture Research Service (ARS) and its long-term National Programs (NP) can play a vital role. The following National Programs can and should fund research focused on organic systems:

- *NP 216 Sustainable Agriculture Systems Research.* Inclusion of several organic systems in the Long-Term Farming Systems Trials in Beltsville, MD has played a key role in documenting the potential climate, soil, and environmental benefits of organic agriculture. Initiating long term organic systems research at additional sites in different agro-ecoregions can help organic farmers across the US realize their potential to build resilience and reduce their GHG footprint.
- *NP 101 Food Animal Production and NP 103 Animal Health.* Organic research in these areas can help overcome challenges in organic livestock production.

- *NP 211 Water Availability and Watershed Management.* One of the benefits of healthy, organically managed soils is their greater capacity to absorb heavy rainfalls and to hold larger amounts of plant-available moisture to sustain crops and pasture through extended dry spells. Additional research is needed to optimize soil water management in organic systems in different agro-ecoregions.
- *NP 212 Soil and Air.* This NP directly addresses soil health, soil-plant-atmosphere carbon cycling, and GHG emissions or removals. Further study is urgently needed to develop improved models for carbon and nitrogen cycling in organic systems, and identify best organic management practices for GHG mitigation in each of the major agro-ecoregions.
- *NP 301 Plant Genetic Resources, Genomics, and Genetic Improvement.* While the NOP disallows the use of crop cultivars derived from genetic engineering methods, the information accrued through modern genomic and phenomic analysis, and advanced plant breeding lines developed through long term breeding research can support efforts to develop and release new public cultivars for organic producers. Plant genetics have been found to have substantial impacts on the efficacy of plant-microbe associations for nutrient efficiency as well as disease suppression and overall vigor and yield. Committing a substantial part of NP 301 funds to breeding research and breeding line selection conducted under organic conditions and using NOP-allowed methods will complement the efforts of OREI-funded farmer-participatory plant breeding networks to develop and release new cultivar for organic producers.
- *NP303 Plant Diseases.* Recent advances in biological disease management using beneficial microbes and other NOP-allowed materials and methods illustrate the potential for this approach, in conjunction with plant breeding for horizontal (multi-gene) resistance to provide effective crop protection from pathogens in organic systems. Successful control of crop disease without the use of soil-disruptive fungicides will further improve the ratio between organic yield and GHG footprint.
- *NP305 Crop Production.* As noted earlier under NP 216, long term research into organic cropping systems will speed advances in organic crop production, help close the “yield gap,” and again reduce the GHG footprint per unit production.

As part of its Climate Smart Agriculture Strategy, we urge USDA to increase the ARS investment to at least 6% of the total ARS annual budget, or about \$80 million per year. The potential contributions of organic systems and practices to carbon sequestration and climate mitigation, warrant a significant investment in organic research. This level of investment also should be undertaken across other USDA REE agencies, including NIFA, ERS, and other agencies that conduct research related to agriculture.

**Continue to build the capacity of NRCS to support the conservation and climate-mitigation efforts of organic producers. Restore Conservation Stewardship Program (CSP) Enhancements that specifically address the needs of organic and transitioning-organic farmers and ranchers.**

We appreciate NRCS for taking steps toward improving agency capacity to serve organic producers, including separate ranking and funding pools for organic producers within the CSP and the Environmental Quality Incentives Program (EQIP), and information provided to help NRCS field staff and program participants implement conservation practices and enhancements in the context of NOP certified organic production. We are especially grateful for past collaborations between NRCS and National Center for Appropriate Technology, Oregon Tilth, and Wild Farm Alliance, and its current collaboration with OFRF, to develop and update the NRCS Organic Farming Handbook and other implementation resources for conservation on organic farms. We urge USDA to continue and expand its support for organic conservation measures that will contribute to carbon sequestration, climate mitigation, and resilience.

In 2017, NRCS undertook a thorough overhaul of the CSP, reframing its many Conservation Enhancement Activities to relate each Enhancement to a specific Conservation Practice Standard. While this change has facilitated program understanding and implementation, a number of key Enhancements relevant to organic systems were lost. While a few of these have since been restored (notably, an Advanced Grazing Management Enhancement on CPS 528 Prescribed Grazing), the following Enhancements offered prior to 2017 (with corresponding Practice Standards noted in parentheses) remain unavailable through CSP at this time:

- *Using legumes, manure, and compost to meet 90 – 100% of the farm’s N requirements.* (CPS 590 Nutrient Management)
- *Reduce nutrient imports onto the farm.* This Enhancement applied to crop-livestock integrated systems, required 75% of livestock feed and forage to be produced on farm, with manure recycled to meet 50% of crop N needs and 90% of crop P and K needs (CPS 590 Nutrient Management).
- *On-farm composting of farm organic waste* (CPS 317 Composting Facility).
- *Transition to organic grazing system, and transition to organic cropping system.* These two Enhancements were designed to help transitioning producers meet NOP requirements and develop their Organic System Plans. (offer as Bundles for Organic Grazing land and Organic Cropland).
- *Biological suppression and other non-chemical techniques to manage brush, herbaceous weeds, and invasive species* (CPS 314 Brush Management and CPS 315 Herbaceous Weed Treatment).
- *Use of non-chemical means to kill cover crop.* (CPS 340 Cover Crop).
- *Non-chemical pest management for livestock* (CPS 595 Pest Management Conservation System).
- *Integrated pest management for organic farming* (CPS 595 Pest Management Conservation System).

Many of these enhancements, notably the advanced nutrient management practices and on-farm composting, can help organic producers meet their conservation and resilience goals while increasing their contribution to the vital goal of GHG reduction and climate mitigation. Current NRCS offerings (practices and enhancements) related to nutrient management do not reflect the current science indicating that the soil health practices of organic and sustainable producers can greatly reduce the need for applied N, and thereby minimize the climate risk of N<sub>2</sub>O emissions.

Because of the large role that N<sub>2</sub>O plays in the overall climate impact of US agriculture, we strongly urge NRCS to reinstate advanced biologically-based nutrient management enhancements in the CSP. In addition, CSP support for organic transition and for non-chemical pest and weed management practices will help more growers make the transition to climate-friendly and resilient organic production systems, and will directly protect the soil life that plays such a central role in carbon sequestration, nutrient cycling, and mitigation of N<sub>2</sub>O emissions.

Finally, we want to note that composting and compost utilization have always played a central role in organic production systems for good reason. When used at rates in alignment with sound nutrient management, compost stabilizes SOM, builds soil biodiversity and soil health, and enhances the benefits of cover crops and other vegetative practices for carbon sequestration, soil health, and yield stability, and agricultural resilience. Therefore, we welcome the development and ongoing refinement of the new Interim Practice Standard 808 Soil Carbon Amendment, which includes compost, biochar, and certain plant-based organic amendments, and urge that it be made available nationwide as soon as possible. In addition, we urge USDA to reinstate the above-noted on-farm composting as an Enhancement on either CPS 317 or CPS 808.

**Ensure racial equity in implementation and delivery of new USDA initiatives related to Climate Smart Agriculture and Forestry, and in all existing research, conservation, crop insurance, and other USDA programs.**

We appreciate USDA efforts in recent years to begin to address historical and systemic racism throughout the US food and agricultural system, and we urge all agencies within the Department to redouble their efforts to achieve true racial equity in their programs and activities.

Producers of color and communities of color are disproportionately impacted by climate disruption, as well as by air and water pollution from concentrated animal feeding operations and other industries, and most recently the covid-19 pandemic. Less well-known is the tremendous contribution that the African Diaspora has made to our knowledge of best sustainable, organic, soil-building, and climate-friendly farming systems. For example, at the beginning of the 20<sup>th</sup> Century, George Washington Carver of Tuskegee University taught and promoted key soil health practices such as crop diversity, cover cropping, and return of organic residues to the soil, which have been codified in the NOP standards and promoted through NRCS conservation programs.

Similarly, traditional Native American food production systems include many advanced climate-mitigating and resilience practices, including “terra preta” soil management systems in the Amazon Basin of South America, the forest gardening methods in place in eastern North America before the arrival of Christopher Columbus, and the “three sisters” polycultures adapted to various humid to semiarid agro-ecoregions by several Native American Tribes.

It is vital that USDA’s climate-friendly agriculture strategy fully reach and serve farmers and communities of color in order to help them build agricultural and community resilience to the ongoing and mounting impacts of climate disruption. It is equally vital to engage and honor our farmers of color as equal partners in our ongoing collective endeavors to build climate-friendly and climate-resilient agriculture, forestry, and food systems. Part of this task is to review USDA

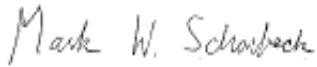
research, conservation, and other programs to identify remaining barriers to effective participation by farmers and other stakeholders of color, and to develop and implement effective measures to remove those barriers to full engagement.

In closing, we would like to express our appreciation to USDA for its active engagement in carrying out the Executive Order to tackle the climate crisis, and for inviting stakeholders throughout the general public to provide input and recommendations. Let us know if you have any questions about our recommendations.

Sincerely,

A handwritten signature in cursive script that reads "Brise Tencer".

Brise Tencer, Executive Director

A handwritten signature in cursive script that reads "Mark W. Schonbeck".

Mark Schonbeck, Research Associate