April 29, 2021
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U.S. Department of Agriculture
1400 Independence Avenue S.W.
Washington D.C. 20250

Docket Number: USDA-2021-0003
Re: Notice of Request for Public Comment on the Executive Order on Tackling the Climate Crisis at Home and Abroad

The Cornucopia Institute engages in educational activities supporting the ecological principles and economic wisdom underlying sustainable and organic agriculture. Through research and investigations on agriculture and food issues, The Cornucopia Institute provides needed information to family farmers, consumers, and other stakeholders in the sustainable and organic agriculture community.

The Cornucopia Institute is focused on community resilience; access to clean, nutrient-dense food; and supporting the farmers who produce organic food and contribute to the health of the planet.

Agricultural emissions, particularly carbon dioxide, methane, and nitrous oxide, contribute to anthropogenic climate change.[1] Tilling releases carbon dioxide stored in the soil. Some types of crop cultivation and livestock emit large quantities of methane. Modern farming demands the use of fossil fuels and fertilizers.

Additionally, converting an area to production agriculture is a fundamental change to the *use* of the land (referred to as land-use). When forests are logged or fragile grasslands are tilled so the land can be farmed, the change in land-use alters the earth's ability to absorb or reflect heat and to filter carbon out of the atmosphere. Native ecosystems are excellent carbon sinks and would wisely be conserved.

In general, Cornucopia supports National Organic Coalition's comments. The following are Cornucopia's specific comments, in response to the following questions from Docket Number: USDA-2021-0003 (see USDA questions in blue):

A. How should USDA utilize programs, funding and financing capacities, and other authorities, to encourage the voluntary adoption of climate-smart agricultural and forestry practices on working farms, ranches, and forest lands?

[1] John Lynch, Michelle Cain, David Frame, and Raymond Pierrehumbert. February 3, 2021. "Agriculture's Contribution to Climate Change and Role in Mitigation Is Distinct From Predominantly Fossil CO2-Emitting Sectors." Front. Sustain. Food Syst., 4:300. https://www.frontiersin.org/articles/10.3389/fsufs.2020.518039/full

1. How can USDA leverage existing policies and programs to encourage voluntary adoption of agricultural practices that sequester carbon, reduce greenhouse gas emissions, and ensure resiliency to climate change?

1. The Certified Organic label is an existing USDA program that encourages voluntary adoption of agricultural practices that sequester carbon, reduce greenhouse gas emissions, and ensure resiliency to climate change.

Organic agriculture presents an opportunity to mitigate climate change while creating economic, environmental, and health benefits for all food system participants. If seriously invested in climate change mitigation, the USDA should focus on improving and creating programs that encourage conventional farmers to convert their acreages to organic production.

The definition of "organic production" at 7 CFR § 205.2 specifies that production system practices "…foster cycling of resources, promote ecological balance, and conserve biodiversity."[2] The organic label is unique because it's a voluntary program within the federal regulatory control. New and developing science shows that organic agriculture provides many inherent benefits to climate concerns, especially when compared to conventional, chemically dependent farming.

Baseline organic regulations require organic crop producers to:

a. Select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion.[3]
b. Manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.[4] Raw animal manure must be composted (which limits emissions and nutrient pollution from manure).
c. Manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water.[5]
d. Not use synthetic fertilizers or sewage sludge.[6]
e. Employ cultural practices that enhance crop health, including the selection of plant species and varieties with regard to suitability to site-specific conditions and resistance to prevalent pests, weeds, and diseases.[7]
f. Implement a crop rotation including, but not limited to, sod, cover crops, green manure crops, and catch crops to improve soil organic matter and to manage plant nutrients and pests.[8]

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[2] 7 CFR § 205.2. Organic production. A production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.
[3] 7 CFR § 205.203(a)
[4] 7 CFR § 205.203(b)
[5] 7 CFR § 205.203(c)
[6] 7 CFR § 205.203(d)
[7] 7 CFR § 205.206(a)(3)
[8] 7 CFR § 205.205

The above regulatory basis for crop production includes multiple practices that are beneficial for climate health. Cover-cropping is of particular value to climate health,[9] and is required by existing organic regulations. Organic farmers must adopt an Organic Systems Plan that details the practices they will use to protect and enhance natural resources.

The organic rules and regulations also establish a baseline for organic livestock. In contrast with industrialized livestock confinement operations that are well-known polluters of soil, water, and air, organic livestock are generally afforded access to the outdoors.

Organic livestock producers are required to:

a. Provide pasture access and meet a level of minimum grazing standards when they raise ruminant livestock.[10]
b. Manage manure carefully so that it does not contribute to the contamination of crops, soil, or water and optimizes recycling of nutrients. Pastures and other outdoor access areas must also be managed in a manner that does not put soil or water quality at risk.[11]
c. Prevent continuous total confinement of ruminants in yards, feeding pads, and feedlots.[12]
d. Provide livestock feed that is also certified organic (meaning pastures and any additional feed must also meet the organic standards, prohibiting synthetic fertilizer and chemical usage).[13]

Supporting current organic farmers and helping farmers transition to organic is good climate policy. The Food and Agriculture Organization of the United Nations (FAO) has released Organic Foods: Are They Safer? This report discusses organic agriculture and its ecological roles in sustaining farming practices and protecting the environment, as well as its economic impacts.

A. Organic production immediately produces fewer emissions than conventional agriculture.

Agricultural practices contribute considerably to emissions of greenhouse gases (GHG) emissions. Organic crops have an immediate benefit of 30% fewer GHG emissions when compared to conventional systems[14], primarily because synthetic fertilizers are prohibited by the organic regulations.

B. Improving soil health is a precept of organic production and is necessary for climate health in agriculture.

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[9] Jinshi Jian, Xuan Du, Mark S. Reiter, Ryan D. Stewart. 2020. "A meta-analysis of global cropland soil carbon changes due to cover cropping." Soil Biology and Biochemistry, 143. https://www.sciencedirect.com/science/article/abs/pii/S0038071720300328

[10] 7 CFR § 205.240 Pasture practice standard.

[11] 7 CFR § 205.239(e)

[12] 7 CFR § 205.239(a)(1)

[13] 7 CFR § 205.237 - Livestock feed.

[14] Eduardo Aguilera, Gloria Guzmán & Antonio Alonso. 2015. "Greenhouse gas emissions from conventional and organic cropping systems in Spain. I. Herbaceous crops." Agronomy for Sustainable Development 35:713–724. https://link.springer.com/article/10.1007/s13593-014-0267-9

Soil health is central to agricultural sustainability and a key factor in climate change mitigation and climate resilience.[15]

Currently, soil is under threat by the use of conventional chemicals, mono-cropping, and damaging cultivation practices including excessive tilling. Climate change itself is a threat to soil health. Extended periods of drought interspersed with high rainfall, characteristic of climate change, contribute to the erosion of topsoil, and unpredictable weather and temperatures make farming more complex.

Generally, improving soil quality counteracts climate change by pulling carbon out of the atmosphere. This is similar to how native ecosystems, including prairies and forests, act as carbon sinks in nature. Microbial communities in soil also stimulate plant growth and increase their resistance to various abiotic and biotic stresses. Many of the above requirements of organic cropping and livestock management improve soil quality.

Agricultural intensification leads to ecosystem degradation and loss of productivity due to harm to the soil microbiome. Because soil microbial health is linked to the accumulation of soil organic matter and carbon sequestration in soils, it is important to avoid chemical inputs that disrupt soil health.

Synthetic fertilizers and pesticides disrupt and often harm soil health.[16,17] Pesticides reliably infiltrate the soil or water affecting non-target organisms. Pesticides can damage soil biomass and microorganisms such as bacteria, fungi, and earthworms. Synthetic fertilizers also limit the functioning of soil ecosystems.[18] When a soil ecosystem is unhealthy it provides fewer ecosystem services and decreases yields. Farmers using these synthetic inputs must continue to use high nitrogen synthetic fertilizers—all of which contribute to GHG emissions—to keep good yields. However, soils dependent on chemical applications for fertility and pest control are not resilient, increasing the risk to crops during times of drought and other weather events.

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[15] Dubey, A., Malla, M.A., Khan, F. et al. 2019. "Soil microbiome: a key player for conservation of soil health under changing climate." Biodivers Conserv 28, 2405–2429. https://doi.org/10.1007/s10531-019-01760-5. https://link.springer.com/article/10.1007/s10531-019-01760-5

[16] *See* Richard Schiffman. May 3, 2017. "Why It's Time to Stop Punishing Our Soils with Fertilizers." Environment 360, Yale School of the Environment. https://e360.yale.edu/features/why-its-time-to-stop-punishing-our-soils-with-fertilizers-and-chemicals

[17] *See* Sachchidanand Tripathi, Pratap Srivastava, Rajkumari S. Devi, Rahul Bhadouria. 2020. "Chapter 2 - Influence of synthetic fertilizers and pesticides on soil health and soil microbiology." Agrochemicals Detection, Treatment and Remediation, Pages 25-54. ISBN 9780081030172. https://www.sciencedirect.com/science/article/pii/B9780081030172000027

[18] Bai, Yong-Chao et al. May 8, 2020."Soil Chemical and Microbiological Properties Are Changed by Long-Term Chemical Fertilizers That Limit Ecosystem Functioning." Microorganisms, 8,5:694. doi:10.3390/microorganisms8050694. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7285516/

In contrast, research shows that farming with organic practices increases richness and vibrancy of the soil microbiota when compared with conventionally managed soils.[19, 20] This benefit to soil health also translates to improved carbon storage, better water and nutrient retention, and improved resilience to disease and weather changes.

Organic farmers should be rewarded for the public service of improving depleted, poorly used land.

C. Soil organic carbon is generally increased by practices required by organic producers.

Intensive agriculture has been linked to declining soil fertility and is a known source of GHG emissions. Soil health practices, including reduced tillage, use of cover crops and organic amendments, and perennial crop production, have the potential to build and maintain soil organic carbon levels, which can help reduce carbon dioxide levels in the atmosphere.

Improving soil health should be a goal of any climate-smart practice. Organic practices can both reduce fossil fuel use and provide carbon sequestration in the soil through increased soil organic carbon (SOC). Soil carbon storage is only one of many vital ecosystem services healthy soil provides to the public. Healthy soils offer agricultural resilience in the face of unpredictable weather patterns that will become commonplace with climate change.

Cover cropping, a practice required by the organic regulations, is the most direct way to build beneficial soil organic matter on-farm.[21] In fact, cover cropping is even more effective in building soil organic carbon than no-till systems that still use synthetic fertilizers and pesticides.

Organic soils generally perform better than conventionally managed soils. One study found that on average, organic farms have 44% higher levels of humic acid, 13% more soil organic matter, and 26% greater potential for long-term carbon storage.[22]

In one long-term US study, the highest levels of soil organic matter occurred on pastures being lightly grazed with livestock without any tilling (so as to avoid overgrazing and most likely to mimic wild prairie ecosystems). These grazing systems are common in the organic industry because pasturing is required by the regulations. Diversified vegetable and/or crop farms, most

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[19] Hartmann, M., Frey, B., Mayer, J. et al. 2015. "Distinct soil microbial diversity under long-term organic and conventional farming." ISME J 9, 1177–1194. https://doi.org/10.1038/ismej.2014.210. https://www.nature.com/articles/ismej2014210

[20] Rodale Institute Website. 2021. "FARMING SYSTEMS TRIAL." Accessed 2/26/2021. https://rodaleinstitute.org/science/farming-systems-trial/

[21] Jinshi Jian, Xuan Du, Mark S. Reiter, Ryan D. Stewart. 2020. "A meta-analysis of global cropland soil carbon changes due to cover cropping." Soil Biology and Biochemistry, 143. https://www.sciencedirect.com/science/article/abs/pii/S0038071720300328

[22] Elham A.Ghabbour, et al. 2017. National Comparison of the Total and Sequestered Organic Matter Contents of Conventional and Organic Farm Soils." Advances in Agronomy, 146: 1-35. DOI: 10.1016/bs.agron.2017.07.003. https://www.sciencedirect.com/science/article/pii/S0065211317300676#:~:text=Using%20data%20from%20the%20National,organic%20samples%20(mean%208.33).

of which were organic, obtained the second highest level of soil organic matter.[23] In every respect, monocultures perform poorly.

Carbon sequestration in agriculture must not be overstated, however. Agricultural soils are volatile and the carbon cycle is dynamic rather than static. Simply expressed, crop harvesting removes carbon from the cycle. Instead, the focus should be on promoting climate resilience in all levels of food production. Climate resilience in agriculture requires healthful, vibrant soils and healthful watersheds—which are precepts of organic agriculture.

D. Authentic organic farming provides other benefits to climate resilience.

Small, diverse farms tend to be more climate-friendly due to their use of hand labor and a focus on local sales. Preserved on-farm wildlife habitats and responsible management of pastures for grazing livestock serve as carbon sinks and habitat for stressed wildlife. On a macro scale, the synthesis of fertilizers and pesticides is energy-intensive and a huge source of climate pollution that is rarely acknowledged by conventional agriculture proponents.

Organic farming also supports biodiversity, which benefits climate resilience. The Organic Food Production Act's (OFPA) Preamble to the Final Rule establishing the National Organic Program states: "[t]he use of 'conserve' [in the definition of organic production] establishes that the producer must initiate practices to support biodiversity and *avoid, to the extent practicable, any activities that would diminish it*. Compliance with the requirement to conserve biodiversity requires that a producer incorporate practices in his or her organic system plan that are *beneficial to biodiversity* on his or her operation" [emphasis added].[24]

The conservation, management, and restoration of biodiversity is critical for ecosystem health and climate change mitigation. Fully functioning ecosystems provide "ecosystem services," including but not limited to carbon sequestration, water filtration, flood control, and habitat for beneficial pollinators.

2. The USDA should *improve* existing strategies by closing loopholes, improving standards, and providing incentives to farmers that are already participating in or transitioning to climate smart agriculture.

To encourage voluntary adoption of climate-smart agriculture the USDA must create viable incentives for existing programs. In addition, loopholes that create counterproductive climate policy must be closed in existing programs, including the USDA organic program.

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[23] Results from ongoing research by NY Soil Health Workgroup, which is currently led by Joseph Amsili from Cornell University's New York Soil Health Initiative. Research is ongoing, but current data can be found here: Joseph Amsili, Harold van Es, Robert Schindelbeck, Kirsten Kurtz, David Wolfe, and Galia Barshad. September, 2020. "CHARACTERIZATION OF SOIL HEALTH IN NEW YORK STATE." https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/6/7573/files/2018/04/Characterization-of-Soil-Health-in-New-York-State-Technical-Report.pdf

[24] 76 FR 80563

A. The USDA should support and increase funding for existing programs that synergize with organic agriculture and otherwise encourage climate-smart agriculture.

Cornucopia supports improving and increasing funding to existing USDA conservation programs. Farmers who are performing genuine soil health, carbon sequestration, and land stewardship practices that provide further ecosystem services should be rewarded for their efforts. In addition, farmers transitioning to these practices should be incentivized through existing and new programs.

Cornucopia specifically supports these existing programs:

- Environmental Quality Incentives Program (EQIP),
- Conservation Stewardship Program (CSP)
- Conservation Reserve Program (CRP)
- Agricultural Conservation Easement Program (ACEP), and
- The National Institute of Food and Agriculture's Sustainable Agriculture Program

Cornucopia also supports the Agricultural Resilience Act in the House and the Climate Stewardship Act in the Senate, 2021. We would also support the re-authorization of the Conservation Security Program (insofar as its benefits are not covered by the Conservation Stewardship Program).

B. Loopholes within the USDA organic program must be closed to maximize the climate benefits of the program.

Loopholes created or allowed within the USDA organic program have caused schisms within the industry. Consistency is required by OFPA, and the following areas within the existing rules are inconsistent with what is otherwise climate-smart agriculture:

i. **Soilless production does not contribute to climate mitigation.** Soilless production, including "organic" hydroponic and container production, does not provide ecosystem services. While hydroponic and container-growing agriculture has its place in the food system, soilless production does not contribute to soil health, improving biodiversity, or other ecosystem services that support climate resilience. Despite law that mandates soil-fertility requirements for organic crop producers, hydroponic and container-based operations continue to carry the USDA organic seal.

ii. **Native ecosystems must be protected to maintain climate resilience.** Native ecosystems such as wild prairie, old-growth forest, and native wetlands provide more robust ecosystem services than is possible on any agricultural land. Unfortunately, these ecosystems are fragile and rapidly disappearing on a global scale. Currently, there is a perverse incentive within the organic rules and regulations: Because prohibited chemicals have not been applied to the land in question, native ecosystems can be immediately put into organic production, without the customary three-year transition period. In 2018, the National Organic Standards Board (NOSB) recommended adding regulatory language that would require farmers pursuing organic certification for a site that qualifies as a native ecosystem to wait 10 years from the time the land is first converted to agriculture. Cornucopia continues to urge the USDA to enact that recommendation.

iii. **Concentrated livestock production is not climate-smart or in line with organic principles.** Regulatory and enforcement shortfalls for organic livestock and poultry have allowed highly concentrated operations to be certified organic. As already discussed, research shows that some of the most climate friendly farming systems are those that combine livestock and pasture in a relationship that mimics the grazing patterns of wild herds. Allowing the expansion of industrialized livestock operations is counterproductive to climate-smart agriculture, as concentrated livestock are among the largest polluters in agriculture.

iv. **The "origin of livestock" loophole has unintentionally allowed organic dairies to cycle conventional livestock in and out of organic production.** This loophole must be closed to give authentic organic dairies that emphasize climate-smart practices a fighting chance.

C. Improve existing rules, regulations, and programs and enforcement of those tools.

Cornucopia recommends making the organic rules and regulations more rigorous. Climate-smart practices that are already present within the organic standards should have stricter standards and stronger enforcement. The existing requirements to use soil building practices (such as crop rotations, cover cropping, careful tillage, and use of compost) and support biodiversity are quantifiable and should be measured. We recommend utilizing resources produced by the Wild Farm Alliance to guide standards concerning biodiversity.

In addition, Cornucopia suggests these improvements to existing programs:

- Incentivize the transition to organic agriculture, specifically to include BIPOC (Black, Indigenous, and people of color) who have been historically marginalized in USDA programs.
- Solidify the role of the National Organic Standards Board (NOSB) by requiring the National Organic Program to respond to their recommendations in a timely manner and allowing the NOSB to control their own work agenda. Made up of 15 members of the organic community, the NOSB is uniquely equipped to address organic issues as they arise.
- Provide the NOSB with technical support, particularly in the areas of research and legal advice.
- Increase research funding into regionally adapted cultivars and animal breeds that are ideally suited to changing climates and to farming systems that are proven to be climate-friendly.

D. Improve organic cost share and incentivize producer transitions.

In light of continued market stress due to the COVID-19 pandemic, Cornucopia advocates for policy and funding improvements to the Organic Certification Cost Share Program.

In August 2020, the USDA's Farm Service Agency announced reduced reimbursement rates for the program, which helps organic farmers recoup some of their certification costs. This change hobbles community-scale farmers that rely on these programs to continue their climate-smart farming practices.

Cost share payments should be restored and increased for organic farmers so that they can rely on their certification costs being covered. Cornucopia recommends increasing reimbursement rates to $1,000 annually per certification scope.

The cost share program reimbursement process should also be improved. Reimbursements should go directly to organic certifiers to reduce certification fees, as opposed to reimbursing organic operations the fees they pay to certifiers.

Cornucopia further recommends expanding the cost share program to address costs faced by farmers transitioning to organic.

2. What new strategies should USDA explore to encourage voluntary adoption of climate-smart agriculture and forestry practices?

Cornucopia supports the NOC's comments on this question. In summary, Cornucopia supports:

- Creation of a Farmer-to-Farmer Mentorship Program for Farmers Transitioning to Organic,
- Addressing land access challenges for organic farmers, particularly BIPOC farmers and aspiring producers, and;
- Creation of a new Organic Stewardship Program within the NRCS.

B. How can partners and stakeholders, including State, local and Tribal governments and the private sector, work with USDA in advancing climate-smart agricultural and forestry practices?

Cornucopia supports the National Organic Coalition's comments on this question. Specifically, research and funding should focus on the needs of local watersheds rather than trying to tackle climate change mitigation problems on a national scale.

As the USDA works with other partners and stakeholders, it is vital that historically underrepresented peoples are not left out of planning, conversation, and leadership. Discriminatory practices have led to unequal assistance in different areas of the country and every effort should be made to undo this ongoing injustice.

C. How can USDA help support emerging markets for carbon and greenhouse gases where agriculture and forestry can supply carbon benefits?

Carbon markets are not appropriate for food production agriculture and are ineffective for climate change mitigation.

Carbon markets are not the answer to climate change in the food system or elsewhere. Some of the current federal legislative and policy initiatives focus on private carbon market schemes where polluting entities can offset their environmental impacts by purchasing carbon credits. Most of these carbon market schemes in the agriculture system seem to be structured to attract

larger scale farmers who agree to modify their agricultural practices, and then offer payments based on measuring the annual increases of soil carbon sequestered from the atmosphere.

Carbon markets come with some insurmountable problems:

- There is no way to accurately measure soil carbon in agricultural soils to the degree needed to truly offset big polluters.
- Carbon markets do not actually change the behavior of polluters who create the majority of global emissions.
- There is huge potential for fraud and risk of polluters "greenwashing" their carbon credits while their polluting externalities continue unabated.
- Communities of color are often more adversely impacted by industrial pollution, putting them at greater risk for adverse health effects. Under carbon market schemes, this risk would be unmitigated.
- The current carbon market schemes only reward new adaptors, leaving tried and true soil health practitioners to finance their own beneficial practices.
- Carbon markets entirely ignore the volatile nature of the carbon cycle, particularly when it comes to soils.

The paper Why Carbon Markets Won't Work for Agriculture outlines in detail the reasons carbon markets are inappropriate for climate-smart practices.[25] Further, Institute for Agriculture and Trade Policy and National Family Farm Coalition made a joint statement on carbon markets and how they do not work for agriculture.[26]

Most organic farmers have been using climate-friendly practices for years and few of the suggested market approaches award farmers who have improved soil health for decades.

D. What data, tools, and research are needed for USDA to effectively carry out climate-smart agriculture and forestry strategies?

1. Ongoing research should focus principles of continuous improvement and adaptive management in the face of climate crisis and de-emphasize intensification in agriculture.

Cornucopia supports investing in research that furthers the development of holistic soil-based production based on agroecological principles. The FAO describes agroecology as "…an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimize the interactions between plants, animals, humans and the environment while taking into consideration the social

[25] IATP and National Family Farm Coalition. Feb 4, 2020. "Why Carbon Markets Won't Work for Agriculture." https://www.iatp.org/documents/why-carbon-markets-wont-work-agriculture

[26] National Family Farm Coalition. February 4, 2020. "IATP and NFFC Report on Carbon Markets and Climate Policy." https://nffc.net/iatp-and-nffc-report-on-carbon-markets-and-climate-policy/

aspects that need to be addressed for a sustainable and fair food system."[27] Agroecological management of our food system is likely to offset the trade-off between production and environmental impacts.

As mentioned throughout these comments, Cornucopia recommends an increase in federal research dollars focused on organic agriculture and climate-friendly food production. Cornucopia specifically supports funding research in these areas:

- Research into nutrition, particularly micronutrients, from different production systems. Preliminary research suggests that soil-based organic systems produce more nutrient dense food, which is an important factor in sustainability.
- Increased funding and research into soil science, including determining the benefits of organic management and the impacts of pesticides and synthetic fertilizers on soil health and climate mitigation in different production systems.
- Increased research into perennial crop varieties, intercropping, permaculture, silvopasture, and other techniques that focus on carbon sequestration.
- Research into agricultural resilience in farms and agricultural infrastructure is needed in light of climate insecurity.
- Research into the impacts of monoculture on soil, biodiversity, and climate resilience and how it compares to diversified systems.
- Cornucopia also supports the research priorities for organic agriculture and climate change offered by the Organic Farming Research Foundation.[28]

2. Tools and funding that support good land stewardship in agriculture must be emphasized.

Cornucopia supports expanding funding and access to conservation and land stewardship programs across the board. Farmers cannot be expected to take on all the risks of stewarding the climate themselves.

Expanding farmer conservation programs must be tempered by checks on corporate power and limitations on industry access to public programs targeted at family farmers. Corporate control of our food and agriculture system is hostile to efforts to address the climate crisis. Ultimately the USDA should encourage voluntary adoption of climate-smart agricultural practices through evidence-based practices, not corporate speculation.

In addition, Cornucopia supports expanding education and extension efforts so that producers have access to the most up-to-date information about climate-friendly agricultural practices *and the programs that help incentivize and encourage those practices.*

This should include but not be limited to:

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[27] Food and Agriculture Organization of the United Nations. "THE 10 ELEMENTS OF AGROECOLOGY GUIDING THE TRANSITION TO SUSTAINABLE FOOD AND AGRICULTURAL SYSTEMS." http://www.fao.org/3/i9037en/i9037en.pdf

[28] Organic Farming Research Foundation. 2020. "Research Priorities For Organic Agriculture and Climate Change 2020." https://ofrf.org/wp-content/uploads/2020/08/RESEARCH-PRIORITIES-FOR-ORGANIC-AGRICULTURE-AND-CLIMATE-CHANGE-2020.pdf

- Increased funding toward ATTRA, a federally funded information and research clearinghouse that provides high-value information and technical assistance to farmers, ranchers, extension agents, and educators regarding sustainable agriculture.
- Increasing education, access, and funding to help people of color who have been the most heavily impacted by the negative aspects of the industrialized food system and who have been historically marginalized in USDA programs.

E. How can USDA encourage the voluntary adoption of climate-smart agricultural and forestry practices in an efficient way, where the benefits accrue to producers?

The organic label is an existing voluntary program that can be improved by strengthening cost share and regulations and providing more monies for enforcement and incentive programs.

As already discussed, the best and most expedient way toward truly climate-smart agriculture is to incentivize farmers to use climate-friendly practices for existing conservation programs like the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), and the Conservation Reserve Program (CRP). The funding and scope of these programs should be expanded and targeted toward rewarding farming practices that are proven to mitigate climate change risk.

To counterbalance these efforts, practices that *harm climate resilience*, such as the overuse of synthetic fertilizers, pesticides, and mono-cropping, should be discouraged. Incentive programs, subsidies, and crop insurance should all be premised on quantifiably good land stewardship, not corporate handouts.

Other examples of worthy practices to employ include using supply management to raise farm-gate prices while limiting over-production of commodity crops, addressing corporate monopolies in the agriculture sector (including limiting corporate ownership of agricultural land), and strengthening local food supply chains (particularly in communities of color and/or within known food deserts).

Climate change presents challenges for farmers and eaters globally. Conventional agricultural practices have contributed to climate change through many avenues.[29] Emissions from the sector predominantly come from intensification, which includes heavy use of fossil fuels (on-farm and in the manufacturing of pesticides and fertilizers) and soil degradation. Now that we know better, we must do better.

Even with this knowledge, policymakers, stakeholders, and society as a whole must remember that the role of agriculture in climate mitigation is a much broader topic than climate science alone can inform. The conversation around climate and food production includes considerations of economic and technical feasibility, preferences for food supply and land-use, and notions of

[29] John Lynch, Michelle Cain, David Frame, and Raymond Pierrehumbert. February 3, 2021. "Agriculture's Contribution to Climate Change and Role in Mitigation Is Distinct From Predominantly Fossil CO2-Emitting Sectors." Front. Sustain. Food Syst., 4:300. https://www.frontiersin.org/articles/10.3389/fsufs.2020.518039/full

fairness and justice. Climate health requires that emissions are decreased in all sectors; the solution will not come from agriculture alone. But a more resilient and climate-friendly food system is also one that will remain sustainable for future generations, and that alone makes this work worthwhile.

4. Environmental Justice and Disadvantaged Communities Questions

Cornucopia supports NOC's comments on the environmental justice and disadvantaged communities' questions in full. It is vital that people of color and people from historically oppressed groups are put into *leadership positions* to help guide us into a more resilient and informed future.