November 1, 2021

Robert Ibarra
Commodity Credit Corporation
U.S. Department of Agriculture
1400 Independence Ave, S.W.
Washington, DC 20250

Re: Request for Public Comment on the Climate-Smart Agriculture and Forestry Partnership Program (FR Number: 2021-0010)

Dear Robert Ibarra:

Thank you for the opportunity for the Northeast Organic Farming Association of New York (NOFA-NY) to provide comments on USDA's plans for the Climate-Smart Agriculture and Forestry Partnership and needed actions for the U.S. agriculture sector to address the climate change crisis facing our planet.

Founded in 1983, NOFA-NY is the premier statewide organization growing a strong organic agriculture movement in New York State and is part of a regional network of seven Northeast Organic Farming Associations. NOFA-NY provides education and assistance to local organic farmers; connects consumers with organic farmers; advocates policies that support a sustainable and fair food and farm system at both the state and federal levels; and is the largest USDA-accredited organic certifier in New York. NOFA-NY certifies over 1,100 organic operations in the state, about 54% of all New York organic certified operations.

As a member of the National Organic Coalition, we support and repeat their comments as submitted, below.

Important Role of Organic Agriculture in Addressing Climate Change

Organic agriculture has led innovations in farming for decades, particularly in the development of climate-friendly, soil-building techniques, and farm inputs. Healthy soil is the cornerstone of organic agriculture and a critical solution for addressing climate challenges. Organic farming practices help mitigate climate change by keeping roots in the soil, preventing soil erosion, and sequestering soil carbon. Nutrient-rich, biodiverse soils foster the ability of crops to withstand and adapt to extreme weather-induced events such as droughts, floods, fire, and high winds. Accelerating the adoption of

organic agricultural practices in the U.S. and abroad will go a long way toward solving the global climate crisis.

Concerns have been raised that, since organic field crop yields are below those of conventional crop yields, the net GHG 'footprint' per unit production may not be lower than that of conventional farming. But research demonstrates that yield differentials are crop and location specific and that organic systems can achieve yields equivalent to those realized on conventional farms, especially in times of drought. Research demonstrates that an overall reduction in GHG emissions, due to the widespread adoption of organic farming systems, is possible.[1, 2, 3]

ORGANIC REDUCES A SIGNIFICANT SOURCE OF NITROUS OXIDE EMISSIONS

EPA estimates that U.S. agriculture contributes 8.6% to the country's anthropogenic greenhouse gas (GHG) emissions, releasing the equivalent of 574 million metric tons of carbon dioxide annually into the environment, mostly from fossil fuel production and use. Nitrous oxide emissions from soils comprise 50.4% of all domestic agricultural emissions.[4] The chemical is a long-lived GHG and ozone depleter, with 310 times the global warming potential of carbon dioxide.[5]

- Organic regulations (§205.105) prohibit the use of synthetic substances in crop production.
- Prohibiting synthetic fertilizers in organic reduces a significant agricultural source of N_2O emissions. Since nitrogen is an essential plant nutrient, many organic farmers apply soil amendments such as manure and compost and grow leguminous cover crops, to fix nitrogen in the soil.
- Efficient nitrogen use is key to reducing GHG emissions; aerated organic soils have low mobile nitrogen, which reduces N_2O emissions from agricultural fields.[6]
- The use of synthetic pesticides is largely prohibited in organic agriculture.[7] Synthetic pesticides disrupt nitrogen fixation and inhibit soil life. The absence of pesticides in the soil

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[1] Muller, A., Schader, C., Scialabba, N.E.H., Brüggemann, J., Isensee, A., Erb, K.H., Smith, P., Klocke, P., Leiber, F., Stolze, M. and Niggli, U., 2017. Strategies for feeding the world more sustainably with organic agriculture. *Nature communications*, *8*(1), pp.1-13.

[2] Skinner, C., Gattinger, A., Krauss, M., Krause, H.M., Mayer, J., Van Der Heijden, M.G. and Mäder, P., 2019. The impact of long-term organic farming on soil-derived greenhouse gas emissions. *Scientific reports*, *9*(1), pp.1-10.

[3] Squalli, J. and Adamkiewicz, G., 2018. Organic farming and greenhouse gas emissions: A longitudinal US state-level study. *Journal of Cleaner Production*, *192*, pp.30-42.

[4] Environmental Protection Agency (EPA). (2018) *Sources of Greenhouse Gas Emissions*. https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

[5] Schonbeck, M. et al. (2018) *Soil Health and Organic Farming, Organic Practices for Climate Mitigation, Adaptation, and Carbon Sequestration,* Organic Farming Research Foundation, p. 2. https://ofrf.org/soil-health-and-organic-farming-ecological-approach

[6] UNCTAD/WTO, FiBL. (2007) *Organic Farming and Climate Change*, Doc. No. MDS-08-152.E. Geneva, Switzerland. http://orgprints.org/13414/3/niggli-etal-2008-itc-climate-change.pdf

[7] A small number of synthetic substances are allowed in organic, after review by the National Organic Standards Board (NOSB). The Organic Foods Production Act includes a list of review criteria that the Board must use in determining whether a synthetic substance may be used in organic, including "the effects of the substance on biological and chemical interactions in the

allows diverse organisms and beneficial insects to decompose plant residues and helps sequester carbon.

ORGANIC PRACTICES CAN MITIGATE CLIMATE CHANGE

Healthy, biodiverse soils are integral to thriving organic farming systems and they also impact climate change. As biologically active soils break down crop residues, they release carbon dioxide and nutrients. Stabilized soil organic carbon that adheres to clay and silt particles or resists decomposition is sequestered and can remain in soils for decades or even millennia.

- Organic regulations (§205.203) require the implementation of soil fertility and crop nutrient management practices to maintain or improve soil such as crop rotations, cover cropping, and the application of plant and animal manures.
- Research has shown that if the standard practices used by organic farmers to maintain and improve soils were implemented globally, it would increase soil organic carbon pools by an estimated 2 billion tons per year – the equivalent of 12% of the total annual GHG emissions, worldwide.[8]
- Cover crops, routinely planted by organic farmers after harvesting cash crops, rebuild soil nitrogen, and improve carbon sequestration by adding soil organic matter. Planting deep-rooted cover crops like forage radish or cereal rye further aid in the long-term sequestration of carbon.
- Compost is an important organic farming soil amendment and when used judiciously and in combination with cover crops, it accrues more soil organic carbon than when used alone.
- Adding compost to rangeland and intensively managing and rotating livestock can increase plant productivity and heighten carbon sequestration.
- Diverse crop rotations, using plants with deep, extensive root systems, play an important role in sequestering carbon. Research has shown that although most soil biological activity occurs near the earth's surface to take advantage of the sun, 53% of the global soil organic carbon is found at depths 12-39 inches below the surface.[9]
- Prudent green and animal manure applications, crop rotations, intercropping, and cover cropping improve farm soils and help prevent soil erosion, which depletes the amount of carbon the soil is able to store.

THE ROLE OF NO-TILL SYSTEMS FROM A CLIMATE CHANGE PERSPECTIVE

While no-till systems may show benefits in terms of building soil organic matter and reducing erosion, many of those systems are also chemical-intensive systems that can degrade the biological

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agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock." (7 USC 6518(m)(5))

[8] Schonbeck, M. et al. (2018), p. 42.

[9] *Ibid*, p. 12.

activity in the soil. Biologically active soils have been shown to be a key component to effective carbon sequestration in soil. Organic practices build soil structure as a way to reduce erosion, but also enhance soil biota.[10] [11] [12] [13] [14] [15] [16] [17]

ORGANIC AGRICULTURE INCREASES RESILIENCE TO CLIMATE CHANGE

By design, organic agriculture builds resilience into the system of food production. Growing strong crops and livestock on healthy soils with bountiful biodiversity above and below ground facilitates the ability of organic systems to tolerate, adapt to, and recover from extreme weather conditions.

- High levels of organic matter in organic farm soils increase soil water retention, porosity, infiltration, and prevent nutrient loss and soil erosion. These soil properties make agriculture more resistant to flooding, drought, high winds, and the loss of soil organic carbon.

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[10] Wang, R., Zhang, H., Sun, L., Qi, G., Chen, S. and Zhao, X., 2017. Microbial community composition is related to soil biological and chemical properties and bacterial wilt outbreak. *Scientific reports*, *7*(1), p.343. It concludes: "In a conclusion, the higher abundance of beneficial microbes are positively related the higher soil quality, including better plant growth, lower disease incidence, and higher nutrient contents, soil enzyme activities and soil pH." Abd-Alla, M.H., Omar, S.A. and Karanxha, S., 2000. The impact of pesticides on arbuscular mycorrhizal and nitrogen-fixing symbioses in legumes. *Applied Soil Ecology*, *14*(3), pp.191-200. Shows that pesticide application reduces "beneficial" fungi, which negatively affected plant growth.

[11]Giovannetti, M., Turrini, A., Strani, P., Sbrana, C., Avio, L. and Pietrangeli, B., 2006. Mycorrhizal fungi in ecotoxicological studies: soil impact of fungicides, insecticides and herbicides. *Prevention today*, *2*(1-2), pp.47-61. Found that spore germination and cell growth of mycorrhizae, Glomus mosseae, was adversely affected by pesticides used in agriculture, and in some cases, at much lower concentrations than are approved for use. The study indicates "the experimental tests demonstrated that spore germination and/or mycelial growth of G. mosseae are adversely affected by most of the substances tested and, in some cases, at much lower concentrations than those indicated for use." This justifies the use of AM fungi as a measure of soil health and links it with chemical use. Pesticide use is shown to have a negative effect on the AM fungus *Glomus mosseae.*

[12]The Food and Agriculture Organization, Annex 1 on Soil Organisms states: "Where the soil has received heavy treatments of pesticides, chemical fertilizers, soil fungicides or fumigants that kill these organisms, the beneficial soil organisms may die (impeding the performance of their activities), or the balance between the pathogens and beneficial organisms may be upset, allowing those called opportunists (disease-causing organisms) to become problems.

[13] Prashar, P. and Shah, S., 2016. Impact of fertilizers and pesticides on soil microflora in agriculture. In *Sustainable agriculture reviews* (pp. 331-361). Springer, Cham.

[14] Six, J., Frey, S. D., Thiet, R. K., & Batten, K. M. (2006). Bacterial and Fungal Contributions to Carbon Sequestration in Agroecosystems. *Soil Science Society of America Journal*, *70*(2), 555. doi:10.2136/sssaj2004.0347

[15] Kallenbach, C. M., Grandy, A. S., Frey, S. D., & Diefendorf, A. F. (2015). Microbial physiology and necromass regulate agricultural soil carbon accumulation. *Soil Biology and Biochemistry*, *91*, 279-290. doi:10.1016/j.soilbio.2015.09.005

[16] Druille, M., Cabello, M.N., Omacini, M., and Golluscio, R.A. 2013. Glyphosate reduces spore viability and root colonization of arbuscular mycorrhizal fungi. Applied Soil Ecology 64:99–103; doi: https://doi.org/10.1016/j.apsoil.2012.10.007.

[17] Hamel, C. 2004. Impact of arbuscular mycorrhizal fungi on N and P cycling in the root zone. Can J Soil Sci. 84(4):383-395.

- Diverse cropping and intercropping on organic farms keep pest and predator relationships in check, decreasing crop susceptibility to insect pests and disease and increasing crop resiliency and adaptability to the extreme variabilities of climate change.
- "Given its potential for reducing carbon emissions, enhancing soil fertility and improving climate resilience, Organic Agriculture should form the basis of comprehensive policy tools for addressing the future of global nutrition and addressing climate change."[18]

Responses to Questions about the Climate-Smart Agriculture and Forestry Partnership Program

The USDA Organic market is thriving and as detailed in the previous section, many organic agriculture practices are climate-smart practices. Therefore, NOFA-NY requests that the USDA recognize certified organic products as climate-smart commodities and support the continued growth of the organic industry through the Climate-Smart Agriculture and Forestry Partnership program.

The following responses are those of NOFA-NY alone. We've responded to those questions where we have expertise.

Question 3. In order to expand markets, what types of CSAF project activities should be eligible for funding through the Climate-Smart Agriculture and Forestry Partnership Program? Projects should promote the production of climate-smart commodities and support adoption of CSAF practices.

As noted by the National Organic Coalition, "CSAF projects should reward farmers who change their practices to be more climate-smart. But the ***projects should also reward farmers, such as organic farmers, who are already using climate-smart practices*** because of the soil health and pasture requirements embedded in USDA organic standards." Because of the overlap between certified organic farming practices and climate-smart farming practices, certified organic products should be considered climate-smart commodities.

In addition to increasing funding of existing conservation programs that support the adoption of climate-smart practices including the Environmental Quality Incentive Program (EQIP), the Conservation Stewardship Program (CSP), and the Grazing Lands Conservation Initiative (GLCI), CSAF could continue to strengthen the organic market by supporting projects that:

1. Support farmers transitioning to organic production systems;
2. Train organic technical assistance providers; and

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[18] International Federation of Organic Agriculture Movements (IFOAM). https://www.ifoam.bio/en/advocacy/climate-change

3. Conduct research on organic production systems to better understand climate impacts and improve the ecological and economic outcomes.

Question 4. In order to expand markets, what entities should be eligible to apply for funding through the Climate-Smart Agriculture and Forestry Partnership Program?

Farmers themselves, including organic farmers, should be the primary recipients of CSAF funds. Farmers should also have access to a robust network of support through organizations that provide training and technical assistance, support peer-to-peer learning, and research that encourages continuous improvement of climate-smart practices.

Question 5. In order to expand markets, what criteria should be used to evaluate project proposals for receiving funding through the Climate-Smart Agriculture and Forestry Partnership Program?

CSAF should incentivize and prioritize projects that take a whole-farm systems-based approach to implementing proven climate change mitigation and resilience measures.

Additionally, the program should prioritize projects, and set aside funds to specifically support climate-smart projects led by members of underserved communities.

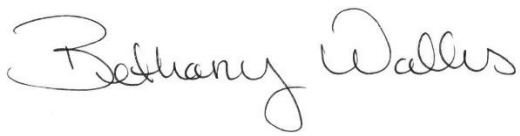
Question 6. In order to expand markets, which CSAF practices should be eligible for inclusion?

Practices that build soil carbon and reduce greenhouse gas emissions should be eligible for inclusion. Furthermore, practices should be verified by a third party and part of comprehensive whole-farm systems planning like the Organic Systems Plan already used by organic farms.

Until there is a standard, accurate way to measure carbon sequestration and year-to-year changes in carbon storage, measuring carbon should not be eligibility criteria.

Thank you for this opportunity to comment.

Sincerely,



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