

April 29, 2021

Docket No. USDA-2021-0003

Office of the Chief Economist  
U.S., Department of Agriculture

**Re: USDA response to the Executive Order on Tackling the Climate Crisis at Home and Abroad.**

The Harvard Law School Food Law and Policy Clinic (FLPC) and Partnership for a Perennial Agriculture appreciate this opportunity to submit a comment on the Executive Order on Tackling the Climate Crisis at Home and Abroad. In particular, this comment responds to question one on climate-smart agriculture and forestry, and question four on environmental justice and disadvantaged communities. FLPC serves partner organizations and communities by providing guidance on cutting-edge food law and policy issues. Specifically, FLPC focuses on increasing access to healthy foods, supporting sustainable and equitable food production, and reducing waste of healthy, wholesome food. Partnership for a Perennial Agriculture is a group of nonprofit organizations and university research programs who envision a diverse, resilient, productive, and equitable future for the American food and agriculture system based on the widespread use of perennial crops.

**Introduction**

Perennial agriculture, which refers to the production of crops that are harvested multiple times and live for several seasons, offers a unique opportunity to drastically reduce global greenhouse gas emissions, while providing varying environmental and societal benefits. Perennial agriculture has historically been practiced by Indigenous and Black populations,<sup>1</sup> and comprises four types of practices which include: perennial forage crops, used in pasture and grazing systems; tree crops integrated into agroforestry including alley cropping, silvopasture, forest farming, and multi-story cropping; perennial fruits and vegetables; and emerging perennial grain crops.<sup>2</sup> Perennial

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<sup>1</sup> See Katie Pace, *Indigenous Agriculture and Sustainable Food*, SUSTAINABLE FOOD CTR. (Oct. 7, 2015, 3:00 PM), <https://sustainablefoodcenter.org/latest/gardening/indigenous-agriculture-and-sustainable-food>; Sytonia Reid & Asher Weinstein, *Unearthing the Legacy of Black Farmers*, GREEN AM. (2020), <https://www.greenamerica.org/communities-frontlines-climate-crisis/unearthing-legacy-black-farmers>; Roger R.B. Leakey, *Twelve Principles for Better Food and More Food from Mature Perennial Agroecosystems*, in PERENNIAL CROPS FOR FOOD SECURITY 282, 285–87 (Caterino Batello et al. eds., 2013).

<sup>2</sup> Examples of perennial crops include fruit trees, and olive trees; perennial forage include orchard grass and alfalfa, while example of perennial vegetables are asparagus and rhubarb. *Perennial Crops: New Hardware for Agriculture*, THE LAND INST., <https://landinstitute.org/our-work/perennial-crops/> (last visited Nov. 15, 2019). Grains, legumes, and oilseeds, however, are virtually all annuals. J.D. Glover, et al., *Increased Food and Ecosystem Security via Perennial Grains*, 328 SCIENCE 1638, 1638 (2010); see also Thomas S. Cox, et al., *Prospects for Developing Perennial Grain Crops*, 56 BIOSCIENCE 649, 649 (2006).

agricultural systems offer significant environmental and climate change mitigation benefits compared to the annual-crop systems that dominate agriculture today.<sup>3</sup> Perennial agricultural practices also are more resilient to extreme climate conditions.<sup>4</sup> Perennial crops generally have deeper roots and longer growing seasons and therefore capture and retain more rainfall,<sup>5</sup> reduce erosion,<sup>6</sup> store more soil carbon,<sup>7</sup> demand less fertilizer and herbicide,<sup>8</sup> require less tillage,<sup>9</sup> decrease nutrient and chemical runoff,<sup>10</sup> and contribute to more diverse and supportive habitats for insects and wildlife.<sup>11</sup> They not only have negative net values for global warming potential, but also demonstrate much higher resilience to variable climate conditions than annual crops.<sup>12</sup>

For example, agroforestry, a type of perennial agriculture that involves integrating trees into the productive agricultural landscape, if implemented nationwide, could sequester 530 million metric tons of carbon dioxide-equivalent (MMCO<sub>2e</sub>) a year.<sup>13</sup> This would offset 33 percent of domestic fossil fuel emissions.<sup>14</sup> The agroforestry practices of “silvopasture,” the incorporation of trees in

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<sup>3</sup> *Id.*

<sup>4</sup> Timothy E. Crews, Wim Carton, & Lennart Olsson, *Is the future of agriculture perennial? Imperatives and opportunities to reinvent agriculture by shifting from annual monocultures to perennial polycultures* 1, *Global Sustainability* (2018), <https://www.cambridge.org/core/journals/global-sustainability/article/is-the-future-of-agriculture-perennial-imperatives-and-opportunities-to-reinvent-agriculture-by-shifting-from-annual-monocultures-to-perennial-polycultures/0F69B1DBF3493462B4D46EB8F0F541EE>.

<sup>5</sup> Kell Douglas B, *Breeding crop plants with deep roots: their role in sustainable carbon, nutrient and water sequestration*, *Annals of botany* vol. 108, 3 (2011): 407-18. doi:10.1093/aob/mcr175.

<sup>6</sup> *Id.*

<sup>7</sup> USDA, U.S. AGRICULTURE INNOVATION STRATEGY: A DIRECTIONAL VISION FOR RESEARCH 14, <https://www.usda.gov/sites/default/files/documents/ais.508-01.06.2021.pdf>.

<sup>8</sup> FRED IUTZI & TIMOTHY CREWS, PERENNIALIZING GRAIN CROP AGRICULTURE: A PATHWAY FOR CLIMATE CHANGE MITIGATION & ADAPTATION 6, *The Land Institute* (Feb.13, 2020), <https://landinstitute.org/wp-content/uploads/2020/09/Land-Institute-2019-2020-soil-carbon-white-paper-v3.pdf>.

<sup>9</sup> J.D. Glover, et al., *Increased Food and Ecosystem Security via Perennial Grains*, 328 *SCIENCE* 1638, (2010); see also Thomas S. Cox, et al., *Prospects for Developing Perennial Grain Crops*, 56 *BIOSCIENCE* 649 (2006).

<sup>10</sup> See Douglas, *supra* note 5 at 3.

<sup>11</sup> Jerry Tallwin, Andrew J. Rook, and Mark S. Rutter, *Impact of grazing management on biodiversity of grasslands*, *Animal Science* 81:193-198, (2005); Andrew J. Rook, Jerry Tallwin, *Grazing and pasture management for biodiversity benefit*, *Animal Research* 52:181-189 (2003).

<sup>12</sup> Thomas S. Cox, et al., *Prospects for Developing Perennial Grain Crops*, 56 *BioScience* 649, 650 (2006); Richard Conant, Carlos E. P. Cerri, Brooke B. Osborne, and Keith Paustian, *Grassland management impacts on soil carbon stocks: a new synthesis*, *Ecological Applications* 27:662-668. (2017); Megan E. McSherry, and Mark. E. Ritchie, *Effects of grazing on grassland soil carbon: a global review*. *Global Change Biology* 19:1347-1357, (2013); Abdalla, M., A. Hastings A, Chadwick DR, Jones DL, Evans CD, Jones MB, Rees RM & Smith P, *Critical review of the impacts of grazing intensity on soil organic carbon storage and other soil quality indicators in extensively managed grasslands*, *Agric Ecosyst Environ* 253:62-81, (2018); Gregg Sanford, Randall D. Jackson, Eric. G. Booth, Janet L. Hedtcke & Valentin Picasso. *Perenniality and diversity drive output stability and resilience in a 26-year cropping systems experiment*, *Field Crops Research* 263:108071 (2021).

<sup>13</sup> Ranjith P. Udawatta & Shibu Jose, *Agroforestry Strategies to Sequester Carbon in Temperate North America*, 86 *AGROFORESTRY SYSTEMS* 225, 239 (2012).

<sup>14</sup> *Id.* at 239.

pastures,<sup>15</sup> and “alley cropping,”<sup>16</sup> the side-by-side cultivation of rows of trees with rows of non-woody plants like cereal crops or vegetables, show particular promise.<sup>17</sup> Farmers could use these two agroforestry practices alone to sequester more than 516 MMCO<sub>2</sub>e per year.<sup>18</sup> In addition, perennial vegetables have the potential to sequester more carbon than annual crops at an estimated 22.7–280.6 MMCO<sub>2</sub>e per year by 2050.<sup>19</sup> Because of these immense benefits in terms of climate change mitigation and adaptation, the USDA should make perennial agriculture a priority in its climate-smart agriculture and forestry strategy.

Yet, all of this potential for perennial agriculture cannot be achieved because there is inadequate funding and research for perennial agriculture; limited knowledge and capacity within USDA to support farmers seeking to adopt perennial practices;<sup>20</sup> insufficient support from federal farm programs for perennial practices; lack of adequate processing and marketing infrastructure for perennial agriculture crops; and the short-term nature of land tenure for most farmers does not sufficiently support perennial agriculture practices. Without support from the USDA, despite its immense societal and environmental benefits, perennial agriculture will remain on the margins of agriculture. The remainder of this comment letter lays out a range of ways that USDA could specifically address each of these challenges to encourage the adoption of perennial agriculture practices in the U.S, and thus maximize the potential for perennial agriculture practices to sequester carbon and mitigate climate change. This comment also discusses ways that policies to support perennial agriculture can address environmental justice.

## Recommendations

### I. Put perennials at the center of efforts to pay farmers for carbon sequestration

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<sup>15</sup> Philip K. Thornton & Mario Herrero, *Potential for reduced methane and carbon dioxide emissions from livestock and pasture management in the tropics*, 107 PNAS 19667 (2010), <https://doi.org/10.1073/pnas.0912890107>; S.H. SHARROW, ET AL., *NORTH AMERICAN AGROFORESTRY: AN INTEGRATED SCIENCE AND PRACTICE 2ND EDITION* 105–31 (2009), <https://doi.org/10.2134/2009.northamericanagroforestry.2ed.c6>.

<sup>16</sup> H.E. GARRETT, ET AL., *NORTH AMERICAN AGROFORESTRY: AN INTEGRATED SCIENCE AND PRACTICE 2ND EDITION* 133–62 (H.E. Garrett 2nd ed. 2009), <https://doi.org/10.2134/2009.northamericanagroforestry.2ed.c7>.

<sup>17</sup> P.K.R. Nair, *Climate Change Mitigation: A Low-Hanging Fruit of Agroforestry*, in *AGROFORESTRY—THE FUTURE OF GLOBAL LAND USE* 31–67 (P.K. Ramachandran Nair & D. Garrity eds., 2012), [https://doi.org/10.1007/978-94-007-4676-3\\_7](https://doi.org/10.1007/978-94-007-4676-3_7).

<sup>18</sup> See Udawatta & Jose, *supra* note 13 at 239.

<sup>19</sup> Eric Toensmeier, Rafter Ferguson & Mamta Mehra, *Perennial vegetables: A neglected resource for biodiversity, carbon sequestration, and nutrition*, PLoS ONE 5-6, 9 15(7): e0234611. <https://doi.org/10.1371/journal.pone.0234611>; Tamar Haspel, *Perennial grains could be a key weapon against climate change. But not quite yet*, THE WASHINGTON POST, (Jan. 25. 2019), [https://www.washingtonpost.com/lifestyle/food/one-day-perennial-grains-could-be-a-key-weapon-against-climate-change-but-not-until-researchers-increase-their-yield/2019/01/24/6df69be6-1f5f-11e9-8e21-59a09ff1e2a1\\_story.html](https://www.washingtonpost.com/lifestyle/food/one-day-perennial-grains-could-be-a-key-weapon-against-climate-change-but-not-until-researchers-increase-their-yield/2019/01/24/6df69be6-1f5f-11e9-8e21-59a09ff1e2a1_story.html).

<sup>20</sup> Elisabeth Spratt, Jane Jordan, Jonathan Winsten, Pete Huff, Caroline van Schaik, Jane Grimsbo Jewett, Meghan Filbert, Jared Luhman, Erin Meier, and Laura Paine, *Accelerating regenerative grazing to tackle farm, environmental, and societal challenges in the upper Midwest*, *Journal of Soil and Water Conservation* 76:15A-23A (2021).

Agriculture is one of the main sources of greenhouse gas emissions, contributing 9 percent to U.S. greenhouse emissions in 2018.<sup>21</sup> Soil management activities like tilling, irrigating, and fertilizer use,<sup>22</sup> enteric fermentation<sup>23</sup> and manure management practices<sup>24</sup> are the leading sources of agricultural emissions in the United States.<sup>25</sup> At the same time, agriculture faces threats from climate change, such as increased temperatures, changes in rainfall patterns, floods, droughts, fires,<sup>26</sup> and an increase in certain weeds, pests, and diseases.<sup>27</sup> Carbon sequestration offers an opportunity to reduce greenhouse gas emissions<sup>28</sup> and paying farmers for increases in soil carbon sequestration on their farms has the potential to help meet our national climate goals, while generating additional revenue for producers from emerging carbon markets. Perennial crops store more soil carbon than annual crops due to more extensive roots and longer growing seasons.<sup>29</sup> For example, as mentioned above, agroforestry alone has the potential to sequester 530 million metric tons of carbon dioxide-equivalent (MMCO<sub>2</sub>e) a year<sup>30</sup> and perennial vegetables have the potential to sequester at an estimated 22.7–280.6 MMCO<sub>2</sub>e per year.<sup>31</sup> Demand for carbon credits in the voluntary market is increasing due to the acceleration of corporate commitments to become carbon-neutral or carbon-negative over the coming years. Carbon credit projects in the voluntary market are developed based on protocols that are maintained by third-party standards organizations. As such, federal efforts should build on these emerging efforts in the voluntary market.

The USDA should pilot the development of a federal carbon bank to encourage greater carbon sequestration that aims to create price supports for agricultural carbon credits by purchasing a small number of credits from farmers in a few states, focused on the practices that reduce emission of greenhouse gases into the atmosphere. USDA must play a role in ensuring that more of the dollars go to farmers and producers, and not only to middlemen. In particular, the USDA should recognize the higher sequestration potential of perennial agriculture crops compared to annual crops, and offer higher payments for perennial agriculture practices. USDA should also ensure that

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<sup>21</sup> EPA, EPA 430-R-20-002, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS 1990-2018, at 5-1(2020), <https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf>.

<sup>22</sup> *Id.* at 5-2, 5-26 to 5-27, 5-48.

<sup>23</sup> *Id.* at 5-2.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.* at 5-2, 5-26 to 5-27, 5-48.

<sup>26</sup> Prasanna Gowda et al., *Agriculture and Rural Communities*, in U.S. GLOB. CHANGE RSCH. PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT (2018), <https://nca2018.globalchange.gov/chapter/10/>.

<sup>27</sup> *Id.*

<sup>28</sup> *Carbon Sequestration*, USDA AGRIC., RSCH. SERV., <https://www.ars.usda.gov/midwest-area/stpaul/swmr/people/john-baker/carbon-sequestration/> (last visited Apr. 22, 2021).

<sup>29</sup> See Glover, *supra* note 9; Cox, et al., *supra* note 9; NAT. RES. CONSERVATION SERV., AGRICULTURE, CLIMATE CHANGE AND CARBON SEQUESTRATION 7, [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs141p2\\_002437.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_002437.pdf).

<sup>30</sup> Ranjith P. Udawatta & Shibu Jose, *Agroforestry Strategies to Sequester Carbon in Temperate North America*, 86 AGROFORESTRY SYSTEMS 225, 239 (2012).

[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs141p2\\_002437.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_002437.pdf).

<sup>31</sup> See Toensmeier et al., *supra* note 19; Haspel, *supra* note 19.

existing and potential players in the carbon market are knowledgeable about the high carbon sequestration potential of perennial crops and so that perennial agriculture practices receive benefits commensurate with their potential.<sup>32</sup> USDA must also ensure that the benefits are equally available to smaller and mid-size producers, and to socially-disadvantaged farmers and ranchers, who may otherwise be left out of these benefits. This is vital because many BIPOC producers utilize perennial practices or have forested lands, and extra care should be taken to ensure these producers are included in these opportunities.

## **II. Develop an inter-agency perennial agriculture strategy**

USDA should develop an agency-wide perennial agriculture strategy to support the widespread adoption of perennial agriculture, and to aid with transitioning U.S. agriculture from a predominantly annual crop- based system to a perennial agriculture system. Because so much of the U.S. agricultural system, and likewise the funding, research, and supports offered by USDA, are targeted to production of annual crops, a change in mindset is needed across USDA to better incorporate support for perennial crops into existing and developing programs. An agency-wide strategy should identify opportunities within existing policies and programs and also pilot or develop relevant programs to expand perennial agriculture. Departments that should be engaged in development and implementation of the strategy include: National Institute of Food and Agriculture, Economic Research Service, Agriculture Marketing Service, Farm Service Agency, Agricultural Research Service, Forest Service, Natural Resource Conservation Service, and Risk Management Agency. The agency-wide strategy can incorporate many of the suggestions included below, but should also go a step further, connecting relevant departments across USDA to discuss additional opportunities and to change the ethos at USDA in order to ensure that perennial agriculture practices are at least on equal footing with annual agriculture practices, if not further incentivized.

## **III. Enhance technical assistance and outreach for perennial agriculture practices**

Perennial agriculture has a foothold in U.S. agriculture, such as in the livestock grazing sector and in the existing specialty crop-scale tree fruit and nut industry, but there is enormous untapped potential for scaling up and moving into new geographies.<sup>33</sup> Consequently, in most cases farmers need technical assistance to adopt or expand perennial agriculture practices. For example, perennial forage extension and outreach capacity has declined sharply in much of the US in recent

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<sup>32</sup> See Iutzi & Crews, *supra* note 8 at 4.

<sup>33</sup> See Timothy E. Crews, Wim Carton & Lennart Olsson, *Is the Future of Agriculture Perennial? Imperatives and Opportunities to Reinvent Agriculture by Shifting from Annual Monocultures to Perennial Polycultures*, 1 GLOB. SUSTAINABILITY 1, 11 (2018).

decades,<sup>34</sup> and should be rebuilt. USDA’s extension and technical assistance field staff have little background and capacity in perennial agriculture to support farmers seeking to adopt perennial agriculture practices.<sup>35</sup>

USDA should enhance the capacity of staff in field and extension offices to provide perennial agriculture support to farmers. With expanded capacity, USDA should conduct outreach to farmers to raise awareness about the benefits of perennial farming methods and to facilitate wider adoption of perennial practices that increase farm efficiency and mitigate environmental damage. For example, USDA should train field staff advise growers regarding growing Kernza and other perennial grains, as options for those crops increase in the years ahead. USDA can also offer guidance to farmers on adopting practices like alley cropping, which can be integrated into most row crop operations, and which provides benefits in terms of carbon sequestration, as well as enhanced soil health, less water contamination, and the opportunity for additional revenue from tree crops. Also, the USDA should conduct outreach about the availability of USDA programs that support the transition to perennial agriculture.

In addition, USDA should allocate more funding to the National Agroforestry Center and establish regional agroforestry research centers to expand research on agroforestry practices and train field staff to provide technical support to farmers transitioning to perennial agricultural practices.<sup>36</sup> USDA may house these research centers at the agency’s regional Climate Hubs—joint Agricultural Research Service-Forestry Service operations that support applied research, work with extension organizations, and offer farmer education and outreach.<sup>37</sup> Alternatively, these may be located at land-grant universities, which already conduct agricultural research and outreach.<sup>38</sup>

#### **IV. Invest in perennial agriculture research**

Lack of dedicated research funding impedes the development and adoption of perennial agriculture.<sup>39</sup> Federal funding for agricultural research has steadily declined over recent years, from an estimated \$6 billion in 2003 to \$4.5 billion in 2013.<sup>40</sup> Very little of this funding is used

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<sup>34</sup> Lingxi Chenyang, Andrew Currie, Hannah Darrin & Nathan Rosenberg, *Farming with Trees: Reforming U.S. Farm Policy to Expand Agroforestry and Mitigate Climate Change*, 48 *ECOLOGY L.Q.* 1, 32 (forthcoming 2021), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3717877&download=yes](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3717877&download=yes).

<sup>35</sup> Chloe M. Mattia, Sarah Taylor Lovell, & Adam Davis, *Identifying barriers and motivators for adoption of multifunctional perennial cropping systems by landowners in the Upper Sangamon River Watershed, Illinois*, *Agroforest Systems* 92, 1155–1169 (2018), <https://link.springer.com/article/10.1007/s10457-016-0053-6>.

<sup>36</sup> H.R., 117<sup>th</sup> Congress § 30.

<sup>37</sup> See Chenyang et al., *supra* note 34 at 32-33.

<sup>38</sup> See Chenyang et al., *supra* note 34 at 32.

<sup>39</sup> See Marcia S. DeLonge, Albie Miles & Liz Carlisle, *Investing in the Transition to Sustainable Agriculture*, 55 *ENV’T SCI. & POL’Y* 266, 271 (2016).

<sup>40</sup> Matthew Clancy, Keith Fuglie & Paul Heisey, *U.S. Agricultural R&D in an Era of Falling Public Funding*, USDA ECON. RSCH. SERV. (Nov. 10, 2016), <https://www.ers.usda.gov/amber-waves/2016/november/us-agricultural-r-d-in-an-era-of-falling-public-funding/>.

for perennial agriculture research.<sup>41</sup> For example, In 2014, less than 0.1% of research funding went to agroforestry.<sup>42</sup> In order to support the growth of perennial agriculture, adequate research funding must be allocated for perennial agriculture.

USDA should provide funding explicitly designated for research and pilot programs that support the development and adoption of perennial crops. USDA could designate funds within the Agriculture Food and Research Initiative (AFRI)<sup>43</sup> grants to be used for research and adoption of perennial agricultural practices. This is particularly critical for perennial grain crops, which hold great potential for productivity and scale, but are just starting to emerge from the R&D pipeline into commercial production. In particular, there is also potential for new perennial grains to be identified and commercialized with additional support for R&D. While existing general purpose competitive grant programs have provided some support –for example, in 2020, AFRI funds were awarded for researching Kernza perennial grain (a perennial relative of wheat)<sup>44</sup> – more targeted funding is needed to speed the process of getting these crops fully developed and onto farms.<sup>45</sup> The USDA should also allocate more funds to the Economic Research Service (ERS) and the Sustainable Agriculture Research and Education (SARE) Resilience Initiative specifically to support research on perennial crops. In addition, the USDA should establish an office within the Office of the Chief Scientist to coordinate perennial agriculture research within the USDA.<sup>46</sup> As another opportunity, USDA could encourage the Foundation for Food and Agriculture Research (FFAR) to include support for perennial agriculture research within its funding priorities. FFAR is a public-private funding mechanism created in the 2014 Farm Bill, and funded with \$185 million in the 2018 Farm Bill.<sup>47</sup> While FFAR sets its own funding priorities, subject to its strategic plan required by Congress, USDA provides input and guidance to FFAR. Supporting perennial agriculture would align with many of the goals set out in FFAR’s 2019 strategic plan, such as increasing environmental resilience and supporting conscientious stewardship of natural resources.<sup>48</sup>

## V. Prioritize perennial agriculture in conservation programs

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<sup>41</sup> See DeLonge et al., *supra* note 39.

<sup>42</sup> *Id.* at 266, 271.

<sup>43</sup> *Agriculture and Food Research Initiative (AFRI)*, USDA NATIONAL INSTITUTE OF FOOD AND AGRI., <https://nifa.usda.gov/program/agriculture-and-food-research-initiative-afri>. (last visited Apr. 21, 2021)

<sup>44</sup> *USDA Funds Project Encouraging Farms to Grow Perennial Kernza*, NO-TILL FARMER (Sept. 24, 2020), <https://www.no-tillfarmer.com/articles/10022-usda-funds-project-encouraging-farmers-to-grow-perennial-kernza>.

<sup>45</sup> *Id.*

<sup>46</sup> *Office of the Chief Scientist (OCS)*, USDA, <https://www.usda.gov/our-agency/staff-offices/office-chief-scientist-ocs> (last visited Apr. 3, 2021).

<sup>47</sup> GENEVIEVE K. CROFT, CONG. RSCH. SERV., 2018 FARM BILL PRIMER: AGRICULTURAL RESEARCH AND EXTENSION (Sept. 24, 2019), <https://crsreports.congress.gov/product/pdf/IF/IF11319>; *Our History*, FOUNDATION FOR FOOD AND AGRICULTURE RESEARCH, <https://foundationfar.org/about/our-history/> (last visited April 29, 2021).

<sup>48</sup> FOUNDATION FOR FOOD AND AGRIC. RESEARCH, 2019 STRATEGIC AND SUSTAINABILITY PLAN 6, <https://foundationfar.org/wp-content/uploads/2020/11/FFARStrategicPlan4Printer.pdf>.

Perennial practices are either not prioritized or not included in the three largest conservation programs, the Environmental Quality Incentives Program (EQIP), the Conservation Reserve Program (CRP), and the Conservation Stewardship Program (CSP). Because of the demonstrated impacts on carbon sequestration as well as environmental co-benefits of perennial practices, these three programs should take additional steps to prioritize perennial agricultural practices.

EQIP and CSP are voluntary conservation programs that provides financial and technical assistance to producers to support the adoption of conservation practices on working lands (lands in production). Through EQIP, interested producers apply to NRCS to receive a payment contract for their intended conservation practice(s).<sup>49</sup> NRCS, with input from relevant State and local groups, develops and applies ranking and evaluation metrics to select cost-effective proposals that align with national, state, and local priorities.<sup>50</sup> NRCS maintains a list of practices eligible for payment—which vary by state and are drawn from NRCS’s national list of Conservation Practices—and sets payment rates, which are primarily based on actual costs and/or foregone income.<sup>51</sup> In consultation with the State Technical Committee, NRCS may also designate up to 10 “high priority” conservation practices in each state that are eligible for a higher cost-share arrangement (up to 90% of costs rather than 75%).<sup>52</sup> Similarly, CSP also pays farmers to adopt conservation practices on working lands, with five-year stewardship contracts centered on a conservation plan that applies to the full farming operation. CSP practices are likewise built from NRCS’s national list of conservation practices.

Although these programs offer some support for perennial agriculture, the programs could offer much stronger incentives for producers to adopt these practices. While NRCS’s national list of Conservation Practices includes several perennial practices, such as the agroforestry practices of alley cropping and silvopasture, the list does not clearly include other perennial practices.<sup>53</sup> Further, these practices may or may not be among the practices that states choose to adopt at state NRCS offices. For example, the Massachusetts NRCS Field Office Technical Guide includes silvopasture but not alley cropping,<sup>54</sup> and the state of Nebraska does not have standards for either practice.<sup>55</sup> As a result, limited funding support from CSP and EQIP goes to perennial agriculture practices. In 2018, of the \$1.4 billion EQIP funding that was allocated to farm operations, less than 0.05% supported silvopasture and alley cropping.<sup>56</sup> For CSP, between 2017 and 2020, 22

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<sup>49</sup> 7 C.F.R. § 1466.20.

<sup>50</sup> *Id.*

<sup>51</sup> 7 C.F.R. § 1466.23.

<sup>52</sup> 7 C.F.R. § 1466.23(c).

<sup>53</sup> *Conservation Practices*, NAT. RES. CONSERVATION SERV., [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/cp/ncps/?cid=nrcs143\\_026849](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/cp/ncps/?cid=nrcs143_026849).

<sup>54</sup> *Welcome to the NRCS Field Office Technical Guide (FOTG)*, Natural Resource Conservation Service, <https://efotg.sc.egov.usda.gov/#/details>.

<sup>55</sup> *Welcome to the NRCS Field Office Technical Guide (FOTG)*, Natural Resource Conservation Service, <https://efotg.sc.egov.usda.gov/#/details>.

<sup>56</sup> See Chenyang et al., *supra* note 34 at 28.



silvopasture practices were supported in 2019 and 4 practices were supported in 2020.<sup>57</sup> In that same period, no funding went to alley cropping.<sup>58</sup> Based on the other categories used to document CSP, it is unclear whether any other perennial practices receive funding.<sup>59</sup> In order to incentivize uptake of perennial production practices through its working lands programs, USDA should:

- Incorporate additional explicitly perennial practices in NRCS's Conservation Practices list.
- Work with states to include perennial agriculture practices in their Field Office Technical Guide lists and in their list of top-10 practices eligible for increased EQIP payments.
- Set aside a percentage of program funding in EQIP to support perennial practices<sup>60</sup>. Part of this set aside should be reserved for socially disadvantaged farmers and ranchers, on top of the 5% set-aside already incorporated in the working lands programs' structure.<sup>61</sup>
- Revise its evaluation and ranking metrics for EQIP and CSP contracts to ensure that the full potential of perennial agriculture practices is credited and accounted for in evaluating contracts.
- Increase outreach to farmers about the opportunities to incorporate perennial practices using EQIP and CSP funding.

Under the Conservation Reserve Program (CRP), USDA pays enrolled producers to remove environmentally sensitive lands from production and plant species on that land, such as trees, that improve environmental health for a period of between 10 and 15 years.<sup>62</sup> To determine which producers to contract with, the USDA Farm Service Agency considers the following environmental benefits, "wildlife habitat benefits resulting from covers on contract acres; water quality benefits from reduced erosion, runoff and leaching; on-farm benefits from reduced erosion; benefits that will likely endure beyond the contract period; air quality benefits from reduced wind erosion and cost."<sup>63</sup> Although CRP requirements encourage farmers to plant trees, CRP does not allow farmers to harvest from trees on CRP acres, which is a barrier for farmers wanting to plant harvestable trees.<sup>64</sup> Also, program requirements restrict integration of new trees on land after it has been enrolled under CRP.<sup>65</sup> Finally, at the end of the contract period, producers often return CRP acres into annual crop production. Between 2006 and 2014, sixteen million acres of CRP acres re-

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<sup>57</sup> NRCS Conservation Programs, *Conservation Stewardship Program (CSP)*, NAT. RES. CONSERVATION SERV., [https://www.nrcs.usda.gov/Internet/NRCS\\_RCA/reports/fb08\\_cp\\_cstp.html](https://www.nrcs.usda.gov/Internet/NRCS_RCA/reports/fb08_cp_cstp.html).

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> 16 U.S.C. 3839aa-2, & 16 USC 3841

<sup>61</sup> See *Beginning and Socially Disadvantaged Farmers and Ranchers*, NAT. RES. CONSERVATION SERV., [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nm/programs/financial/eqip/?cid=nrcs144p2\\_068641](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nm/programs/financial/eqip/?cid=nrcs144p2_068641) (last visited Apr. 26, 2021).

<sup>62</sup> *Conservation Reserve Program*, USDA FARM SERV. AGENCY, <https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/> (last visited Apr.23, 2021).

<sup>63</sup> USDA FARM SERV. AGENCY, CONSERVATION RESERVE PROGRAM 1, [https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/FactSheets/2019/conservation-reserve\\_program\\_fact\\_sheet.pdf](https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/FactSheets/2019/conservation-reserve_program_fact_sheet.pdf).

<sup>64</sup> MICHAEL KUHN & DENNIS ADAMS, CC338 TREES AND SHRUBS IN THE CONSERVATION RESERVE PROGRAM 2 (Historical Materials from University of Nebraska-Lincoln Extension 2014). <http://digitalcommons.unl.edu/extensionhist/3351>.

<sup>65</sup> See Chenyang et al., *supra* note 34 at 24.

entered annual crop production.<sup>66</sup> Perennial agriculture practices such as agroforestry offer the same environmental benefits that the CRP programs seeks to achieve. Allowing agroforestry practices on CRP acres can also make it more likely that farmers will retain trees on that land after the land transitions out of CRP, because they are able to see the productive opportunities of utilizing agroforestry on that land.

To encourage the adoption of sustainable perennial agriculture practices, the USDA should:

- Eliminate the prohibition on harvesting of trees on CRP acres, and allocate more funds within the program to support and encourage farmers to plant harvestable trees on CRP acres.
- Review the existing program requirements and lower CRP's existing tree density requirement, which discourages the use of the land for activities like silvopasture.<sup>67</sup> Currently, farmers can only use CRP acres for silvopasture after the expiration of a CRP contract.<sup>68</sup>

## VI. Strengthen marketing infrastructure for perennial products

Regional markets for perennial agriculture are non-existent or under developed, and farmers face difficulty in selling these as premium products in the current U.S. market.<sup>69</sup> Farmers need to see potential end markets for their products in order to make a long term shift to perennial agriculture. To help develop these end markets, USDA should provide market support to farmers and producers of products derived from perennial crops.<sup>70</sup> USDA could allocate funding within existing programs at the Agricultural Marketing Service (AMS) to support processing, marketing, and consumption of perennial products. Rebuilding depleted marketing and processing infrastructure for pasture-grazed livestock (livestock fed on perennial forages) is a particular priority for many parts of the US.

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<sup>66</sup> See ANNE WEIR SCHECHINGER & CRAIG COX, ENVTL. WORKING GRP., 'RETIRED' SENSITIVE CROPLAND: HERE TODAY, GONE TOMORROW? 3 (2017), [https://cdn3.ewg.org/sites/default/files/u352/EWG\\_ParadiseLostReport\\_C03.pdf?ga=2.50975019.347754171.1516926949-371085394.1516926948](https://cdn3.ewg.org/sites/default/files/u352/EWG_ParadiseLostReport_C03.pdf?ga=2.50975019.347754171.1516926949-371085394.1516926948); Ronald A. Wirtz, *Conservation Reserve Program seeing steep decline*, FEDERAL RESERVE BANK OF MINNEAPOLIS (2018), <https://www.minneapolisfed.org/publications/fedgazette/conservation-reserve-program-seeing-steep-decline>.

<sup>67</sup> James Davis, Gordon Rausser, *Amending conservation programs through expanding choice architecture: A case study of forestry and livestock producers*, Volume 177, 2020, <https://www.sciencedirect.com/science/article/pii/S0308521X19302124>; See Chenyang et al., *supra* note 34 at 37.

<sup>68</sup> USDA NAT'L AGROFORESTRY CTR., IS CONVERTING CRP TO SILVOPASTURE RIGHT FOR YOU? Working Trees Info 1, <https://www.fs.usda.gov/nac/assets/documents/workingtrees/infosheets/ConvertCRPSilvopastureMarch2014.pdf>.

<sup>69</sup> Sandra Wayman, Valentine Debray, Stephen Parry, Christophe David, Matthew R. Ryan, *Perspectives on Perennial Grain Crop Production among Organic and Conventional Farmers in France and the United States*, AGRICULTURE 9, no. 11: 244. (2019) <https://doi.org/10.3390/agriculture9110244>; See Chenyang et al., *supra* note 34 at 30.

<sup>70</sup> Asbjornsen H., Hernandez-Santana V., Liebman M., Bayala J., Chen J., Helmers M. Schulte L, *Targeting Perennial Vegetation in Agricultural Landscapes for Enhancing Ecosystem Services*, Renewable Agriculture and Food Systems, 29(2), 101-125, doi:10.1017/S1742170512000385 (2014).

To help build market capacity, USDA could designate a certain percentage of Local Agricultural Marketing Program (LAMP) grant funding specifically for projects that support the perennial crop supply chain.<sup>71</sup> The USDA should dedicate funding within the Farmers Market and Local Food Promotion Program (FMLFPP) and the Regional Food System Partnerships (RFSP) program for perennial crops and grains. Further, USDA should designate a certain percentage of Value-Added Producer Grant (VAPG) funding for processing and marketing of perennial crops and grains. This program helps farmers create or expand value-added activities such as developing new products or marketing opportunities.<sup>72</sup> Finally, the USDA could upgrade supply chains and infrastructure for perennial agriculture by allocating grants for perennial crops and grains within the rural development programs, such as the Rural Business Development Grant and the Agriculture Innovation Center Program.

## VII. **Review federal crop insurance to encourage adoption of perennial agriculture practices**

Current federal crop insurance programs are designed to support annual crops, and as a result, do not adequately support perennial agriculture species that are multi-year.<sup>73</sup> For example, the federal crop insurance program does not cover losses that result from failure to follow good farming practices, but there is no standard definition of good farming practices, instead, the list of approved good farming practices differs from crop to crop and state to state.<sup>74</sup> To encourage the adoption of perennial agriculture practices, USDA should raise awareness and encourage states to include perennial practices as a good farming practice. For example, USDA Risk Management Agency (RMA) recently updated its Good Farming Practice Determination Standards Handbook to recognize NRCS conservation activities,<sup>75</sup> and includes cover cropping as a good farming practice.<sup>76</sup> USDA should include and recognize perennial agriculture practices in the next Good Farming Practice Determination Standards Handbook.

In addition, the Whole-Farm Revenue Protection Program (WFRP) a type of crop insurance structured to better support diversified farms by providing support for all crops on one farm under

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<sup>71</sup> See 7 U.S. Code § 1627c; Press Release, USDA Announces \$37 Million in Grants Available to Local and Regional Food Systems, U.S. DEP'T AGRIC., (Mar. 9, 2020), <https://www.ams.usda.gov/content/usda-announces-37-million-grants-available-local-and-regional-food-systems>.

<sup>72</sup> *Value Added Producer Grants*, U.S. DEP'T AGRIC., RURAL DEV., <https://www.rd.usda.gov/programs-services/value-added-producer-grants> (Apr. 13, 2021).

<sup>73</sup> See Chenyang et al., *supra* note 34 at 27-30.

<sup>74</sup> RISK MANAGEMENT AGENCY, GOOD FARMING PRACTICES PROTECT YOUR INVESTMENT IN CROP INSURANCE 1, [https://www.rma.usda.gov/-/media/RMA/Publications/Risk-Management-Publications/good\\_farming\\_practices.ashx?la=en](https://www.rma.usda.gov/-/media/RMA/Publications/Risk-Management-Publications/good_farming_practices.ashx?la=en).

<sup>75</sup> RISK MANAGEMENT AGENCY, U.S. DEP'T OF AGRIC., GOOD FARMING PRACTICE DETERMINATION STANDARDS HANDBOOK 33–34 (2021), <https://www.rma.usda.gov/-/media/RMA/Handbooks/Program-Administration-14000/Good-Farming-Practice/2021-14060-Good-Farming-Practice-Determination-Standards.ashx>.

<sup>76</sup> *Id.* at 13.

a single insurance policy,<sup>77</sup> has complex technical requirements that reduce the ability for perennial practices to qualify for support.<sup>78</sup> WFRP provides coverage for only the insurance period, which is a farmer or producer's tax year,<sup>79</sup> which is not favorable for perennial agriculture farmers because some perennial agriculture practices such as agroforestry take several years to mature.<sup>80</sup> USDA RMA through the Federal Crop Insurance Corporation (FCIC) should review the WFRP<sup>81</sup> and suggest reforms to tailor WFRP to the needs of perennial agriculture farmers, for example, by identifying mechanisms to address multi-year losses for perennial agriculture.

## VIII. Enhance land tenure security for farmers adopting perennial agriculture practices

Perennial agriculture frequently requires substantial investment and longer time periods to yield a profit.<sup>82</sup> For some species, like trees, it may be decades before a farmer sees a return on initial investment. To transition to more perennial practices, farmers must have adequate land security to adopt and maintain perennial crops, such as long-lived tree species with high sequestration capacity. However, many farmers do not own the land they farm: almost 40% of farm acreage in the US is leased, and 70% of those leases are annual rather than multi-year.<sup>83</sup> Land tenure insecurity impedes adoption of perennial agriculture because the short tenure reduces the incentive to invest in long-term practices.<sup>84</sup> Longer term leases would allow the establishment of profitable perennial agriculture practices, and generally provides a stronger incentive for farmers to invest in conservation practices. USDA should investigate and pilot alternative land tenure models or incentives that can better encourage farmers to invest in perennial practices, for example, developing a program to pay land owners an incentive to engage in longer-term leases when the lessee farmer intends to engage in long-term environmentally beneficial practices, such as perennial practices.

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<sup>77</sup> *Whole-Farm Revenue Protection (WFRP)*, U.S. DEP'T AGRIC., RISK MGMT. AGENCY, <https://www.rma.usda.gov/en/Policy-and-Procedure/Insurance-Plans/Whole-Farm-Revenue-Protection> (last visited Apr. 11, 2021).

<sup>78</sup> USDA, *WHOLE-FARM REVENUE PROTECTION PILOT HANDBOOK, 2021 AND SUCCEEDING POLICY YEARS 22, 30, 48, 71*, <https://www.rma.usda.gov/-/media/RMA/Handbooks/Coverage-Plans---18000/Whole-Farm-Revenue-Protection---18160/2021-18160-WFRP-Pilot-Handbook.ashx?la=en>.

<sup>79</sup> RISK MANAGEMENT AGENCY, *Whole-Farm Revenue Protection Plan*, (Aug. 30, 2019), <https://www.rma.usda.gov/en/News-Room/Frequently-Asked-Questions/Whole-Farm-Revenue-Protection-Plan-2020>. (See "What is the insurance period for WFRP?").

<sup>80</sup> See Chenyang et al., *supra* note 34 at 38.

<sup>81</sup> Agriculture Improvement Act of 2018, Pub. L. No. 115-334, § 11122 (18) (c) (i), 132 STAT. 4930.

<sup>82</sup> SIMONE BORELLI ET AL., FOOD & AGRIC. ORG. OF THE U.N. & INT'L CTR. FOR RSCH. IN AGROFORESTRY, *AGROFORESTRY AND TENURE 5* (2019), <http://www.fao.org/3/CA4662en/CA4662en.pdf>.

<sup>83</sup> DANIEL BIGELOW, ALLISON BORCHERS & TODD HUBBS, USDA ECON. RSCH. SERV., *EIB-161, U.S. FARMLAND OWNERSHIP, TENURE, AND TRANSFER 36* (2014), <https://www.ers.usda.gov/webdocs/publications/74672/eib-161.pdf?v=5092.5>.

<sup>84</sup> USDA, *CAN INNOVATIVE LAND ACCESS STRATEGIES FOR AGROFORESTRY PROVIDE MORE LAND MANAGEMENT OPTIONS? Working Trees Info*, <https://www.fs.usda.gov/nac/assets/documents/workingtrees/infosheets/LeasingMgmtOptionsApr2020-508.pdf>.

USDA could establish an agroforestry land bank, where land is held and designated for future agroforestry activities, although this likely would require authority and funding from Congress.<sup>85</sup> Currently, the federal government controls an estimated 640 million acres or 28% of land and a portion of that land could be reserved for agroforestry to be held by either the Bureau of Land Management or the U.S. Forest Service.<sup>86</sup>

## Conclusion

In conclusion, Harvard Law School's Food Law and Policy Clinic and Partnership for a Perennial Agriculture, along with the following individuals and organizations, encourage the USDA to make perennial agriculture a priority in its climate-smart agriculture and forestry strategy, by using the suggestions laid out in this comment as a roadmap to agency action.

Thank you for your consideration.

Sincerely,

Harvard Law School Food Law and Policy Clinic  
Partnership for a Perennial Agriculture  
Forever Green Initiative  
Green Lands Blue Waters  
The Land Institute  
Savanna Institute  
Randy Jackson, Department of Agronomy, University of Wisconsin  
Sarah Lovell, University of Missouri

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<sup>85</sup> See Chenyang et al., *supra* note 34 at 41.

<sup>86</sup> CAROL H. VINCENT, LAURA A. HANSON & CARLA N. ARGUETA, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 1, CONGRESSIONAL RESEARCH SERVICE, (2017); See Chenyang et al., *supra* note 34 at 41.