

Redefining Value and Risk in Agriculture

Policy and Investment Solutions to Scale
the Transition to Regenerative Agriculture



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& the Environment



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ABOUT THIS REPORT

In June 2020, the Berkeley Food Institute and UC Berkeley School of Law’s Center for Law, Energy & the Environment convened farmers, policy experts, advocates, investors, and other stakeholders in the farming community for a virtual roundtable on public-private solutions to advance regenerative agriculture. We agreed on the problem, yet our diverse perspectives necessitated discussion of the broad range of potential and existing solutions. This report is product of that event, as well as qualitative follow-up interviews with participants. The report and its recommendations are solely a product of the UC Berkeley School of Law and the Berkeley Food Institute and do not necessarily reflect the views of all individual roundtable participants or reviewers.

ABOUT BFI

The Berkeley Food Institute (BFI) seeks to transform food systems to expand access to healthy, affordable food and promote sustainable and equitable food production. BFI empowers new leaders with capacities to cultivate diverse, just, resilient, and healthy food systems.

ABOUT CLEE

The Center for Law, Energy & the Environment (CLEE) channels the expertise of the Berkeley Law community into pragmatic policy solutions to environmental and energy challenges in California and across the nation. CLEE works with government, business, and communities on initiatives that focus on reducing greenhouse gas emissions, advancing the transition to renewable energy, and ensuring clean water for California’s future.

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PHOTO BY WILL BRINKERHOFF

Executive Summary

Regenerative agriculture is a systems-based approach to farming and ranching that, in response to climate change, loss of farmland, and widespread disparity within the food system, seeks to achieve long-term productivity and resilience of agricultural landscapes and communities through building soil health, fostering on-farm and ecological biodiversity, and improving water use-efficiency.¹ Despite its potential, regenerative agriculture has not yet been widely adopted in the United States. While minimum tillage practices and multiple crop rotations are implemented in fields that account for at least 30 percent of US major cash crop output, less than 5 percent of US agricultural land operators employ the full suite of soil health practices promoted at the federal level by the Natural Resources Conservation Service (although rates of use of some specific practices are higher).² Failure to fully transition more land to regenerative stewardship represents a missed opportunity, especially during a global pandemic and recession, when this shift could otherwise drive greater economic, environmental, and food system resilience.

In June 2020, the Berkeley Food Institute (BFI) and the Center for Law, Energy & the Environment (CLEE) at Berkeley Law convened a virtual roundtable of stakeholders—farmers, researchers, investors, and policy experts—to identify critical barriers to regenerative agriculture adoption, as well as solutions with high potential to effect change. Participants envisioned a paradigm shift in which farmers, policymakers, researchers, and investors treat farms as systems and agree on ecological benchmarks that prioritize adaptive management processes over a regimented checklist of practices. Rather than pursuing the extractive approach that dominates industrialized agricultural systems in the United States, farmers would actively promote the biodiversity and ecological processes that improve soil health and deliver ecosystem services, while the public

and private sectors provide economic and technical support. A regenerative system would also reduce risk to farmers through greater resiliency, resulting in improved economic livelihoods, better land security, and help for marginalized growers.

Participants identified five critical barriers to achieving this vision:

- **Economic constraints** that limit farmers' ability to finance upfront costs while creating opportunity costs associated with a transition, such as for seeds, labor, equipment, and infrastructure
- **Misaligned policy incentives** including, but not limited to, crop insurance, loans, technical assistance, and other incentive programs that directly and indirectly prevent farmers from adopting regenerative practices



We inhabit a culture that privileges novelty and growth over the cyclical and the regenerative. Our very idea of productivity is premised on the idea of producing something new, whereas we do not tend to see maintenance and care as productive in the same way.

Jenny Odell, *How to Do Nothing*



¹ Alexandra Lishansky of the Rausser College of Natural Resources, UC Berkeley, developed this definition for regenerative farming based on multiple sources, including the Food and Agriculture Organization of the United Nations and Cornell Cooperative Extension.

² Corona, Benny, Christina Ismailos, Nikhil Kalathil, Anna Larson, and Leo Steinmetz. "Policy Incentives for Soil Health Practices: A Comparative Analysis of Potential Federal Soil Health Policies." *Mad Agriculture*, May 18, 2020, 5. <https://medium.com/mad-agriculture/policy-incentives-for-soil-health-practices-edc8af360ca7>. For data on rates of usage for specific practices, please see "An Economic Perspective on Soil Health" from the USDA Economic Research Service. <https://www.ers.usda.gov/amber-waves/2016/september/an-economic-perspective-on-soil-health/> (accessed September 15, 2020).

- **Structural racism and concentration of market power** that prevent people of color, women, and working-class people from controlling financial resources and farm-level decisions related to regenerative transitions
- **Lack of consensus and knowledge around regenerative farming**, which stems from inadequate resources for research, co-optation by major retailers and agribusinesses, entrenched institutional support for conventional agriculture, over-emphasis on urban rather than rural priorities in policymaking, and the absence of strong support for regenerative agriculture within peer-to-peer farming networks
- **Challenges of achieving land tenure** due to prohibitive land prices and the tight financial margins of farming, which disincentivize long-term investments in the land

There is no single, shared definition of regenerative agriculture, and stakeholders debate whether principles, practices, environmental indicators, outcomes, or whole-farm process plans are the best basis for designation. This report will utilize the definition offered here in the Executive Summary and also provide guidance on how the definition can be interpreted to suit different types of applications—from policy incentives to private investment.

The roundtable and interviews yielded strategies for lowering these barriers that draw on and coalesce existing efforts by nonprofit organizations, research centers, investors, and policymakers. To overcome these priority barriers, the following recommendations summarize the most critical opportunities to support farmers in their transition to regenerative agriculture:

1) Develop a More Robust Research Base

Research institutions should advance the scientific case for regenerative agriculture and standardize measurement protocols

2) Reform Crop Insurance

Congress and the US Department of Agriculture's Risk Management Agency should reform crop insurance to reflect the risk reduction benefits associated with regenerative practices

3) Redefine Risk

Federal and state governments, banks and investors should account for the risk reduction benefits of regenerative practices and reflect those benefits in financing and direct payments

4) Advance State-Level Policies

State governments should expand investments in effective existing policies like incentive programs and peer-to-peer support network initiatives

5) Prioritize Equity in Agricultural Policies

Government at all levels should develop more integrated and equitable systems to serve farmers, such as streamlined technology platforms and more robust technical assistance

6) Urge Landowners and Supply Chain Actors to Enable Regenerative Production

Landowners and supply chains should help promote regenerative farming among tenants and farmers by incorporating flexibility into contracts and removing barriers

Introduction

Since the pre-industrial era, human activity has caused a 1°C increase in earth's temperature, producing vast shifts in climate across the globe. Without intervention, the planet is set to warm an additional 0.5°C in the next few decades. The results of a net increase of 1.5°C would be staggering, from massive heat waves and drought to wide-scale flooding and ocean acidification, and they would undermine economic and public health, food security, and water access. A 2°C increase would lead to even more extreme outcomes.³ To effectively combat global warming, governments and institutions across the globe must quickly implement efforts to decrease greenhouse gas emissions. To avoid cataclysmic impacts, they must also commit to drawing carbon out of the atmosphere through expansive and innovative greenhouse gas sequestration measures.

Twenty-four percent of global greenhouse emissions result from agriculture and forestry.⁴ The predominant farming model in the United States and other industrialized nations relies on heavy fertilizer and pesticide use, intensive use of fossil-fueled machinery, and monocultures. These practices degrade the environment through greenhouse gas emissions, water and air pollution, and soil nutrient depletion. Poor soil health creates long-term yield volatility and makes farmers more financially vulnerable, which in turn undermines the resilience of communities, supply chains, and the economy. But through shifts in growing and land management practices, farmers can reduce emissions, sequester greenhouse gases, and offer additional ecosystem services. Regenerative farming has a critical role to play in this effort, and, according to the Food and



Efficiency is not necessarily resilient.⁵

Loren Poncia, Regenerative Rancher
Owner of Stemple Creek Ranch



Agriculture Organization of the UN, is three to six times more cost effective than current mechanical carbon sequestration technology.

In a time of competing world crises, including the COVID-19 pandemic, lawmakers are seizing opportunities to develop policies that provide benefits to the environment, public health, and the economy. The devastating economic impacts wrought by the coronavirus present a particularly urgent concern. As of April 2020, the unemployment rate was at its highest since the Great Depression, at 14.7 percent, with over 20 million lost jobs.⁶ While the unemployment rate has decreased since April, November's 6.7 percent rate was nearly double what it was in February at 3.8 percent. Part of the decrease is accounted for by the fact that many people, particularly women, have been forced to give up looking for work due to other demands like caretaking.⁷ Meanwhile, food insecurity has increased dramatically, especially for families with young children,⁸ and supply chain breakdowns as well as COVID-19 outbreaks on farms and ranches have exposed the precarity of our industrial food system. The pandemic puts renewed

- 3 Allen, Myles, Mustafa Babiker, Yang Chen, Heleen de Coninck, Sarah Connors, et al. "Summary for Policymakers" in *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Intergovernmental Panel on Climate Change, 2018. <https://www.ipcc.ch/sr15/chapter/spm/>.
- 4 Edenhofer, Ottmar, Ramón Pichs-Madruga, Youba Sokona, Jan C. Minx, Ellie Farahani, et al, eds. *Climate Change 2014: Mitigation of Climate Change*. Cambridge and New York: Cambridge University Press, 2014, 8. https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf.
- 5 Civil Eats. "Regenerative Ranching in a Pandemic." June 16, 2020. <https://civileats.com/2020/06/16/civil-eats-tv-regenerative-ranching-in-a-pandemic>.
- 6 Soucheray, Stephanie. "US Job Losses Due to COVID-19 Highest since Great Depression." Center for Infectious Disease Research and Policy, University of Minnesota, May 8, 2020. <https://www.cidrap.umn.edu/news-perspective/2020/05/us-job-losses-due-covid-19-highest-great-depression>.
- 7 Kochhar, Rakesh. "Unemployment rose higher in three months of COVID-19 than it did in two years of the Great Recession." *Fact Tank*, Pew Research Center, June 11, 2020. <https://www.pewresearch.org/fact-tank/2020/06/11/unemployment-rose-higher-in-three-months-of-covid-19-than-it-did-in-two-years-of-the-great-recession/>.
- 8 Bauer, Lauren. "The COVID-19 crisis has already left too many children hungry in America." *Up Front*, Brookings Institute, May 6, 2020. <https://www.brookings.edu/blog/up-front/2020/05/06/the-covid-19-crisis-has-already-left-too-many-children-hungry-in-america/>.



PHOTO BY ADP FARM

pressure on governments at all levels to shrink their budgets and direct funds toward emergency response (including food security) and economic recovery.

Regenerative agriculture offers a win-win opportunity at the nexus of climate response and COVID recovery. It reduces our vulnerability to environmental, health, and economic crises, now and in the future. America's farms contribute over \$130 billion dollars to GDP each year, and have a multiplier effect in other industries.⁹ Policies that support a rapid transition to this form of agriculture would provide a much-needed economic stimulus, while strengthening agricultural and supply chain resiliency, creating jobs, increasing food access, and achieving positive environmental effects for relatively little cost per ton of sequestered carbon.

Legislators at the federal level are becoming more supportive. In the summer of 2020, Senators Mike Braun (R-IN), Debbie Stabenow (D-MI), Lindsey Graham (R-SC), and Sheldon Whitehouse (D-RI) introduced the Growing Climate Solutions Act (S. 3894/H.R. 7393). They designed the bill to help farmers enter carbon markets by allowing them to sell carbon credits through the use of verified sequestration techniques. In addition, Representative Chellie Pingree (D-ME) put forth the Agriculture Resilience Act (H.R. 5861), which advances the goal to

reach net-zero emissions in US agriculture by 2040. State policymakers, investors, and research institutions should follow in the footsteps of federal leadership by lowering barriers to adoption for producers across the country. A growing coalition of NGOs and businesses support policies that help farmers make the shift to regenerative practices.¹⁰ The current political climate offers a potential opportunity to harness this growing economic and research momentum into large-scale policy change and private sector intervention.

Regenerative Agriculture and Farmer Economics

In policy and investment communities, the concept of “regenerative agriculture” is closely associated with its potential to capture carbon, and this report will focus on carbon sequestration. However, it involves key principles that inform a much broader set of practices and associated benefits, many of which indigenous growers have practiced for centuries. The rejection of these practices in the last century has helped create the carbon-dependent farming system that now predominates. Importantly, regenerative farming goes beyond the common understanding of agriculture as merely a form of commodity production. Rather, farming is a way to actively promote biodiversity, ecological processes, and ecosystem management.

9 Economic Research Service. “Ag and Food Statistics: Charting the Essentials.” United States Department of Agriculture. <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>.

10 California Climate & Agriculture Network. “Support Climate Smart Agriculture.” <https://calclimateag.org/support-climate-smart-agriculture/>.

Regenerative growing can also incorporate additional practices with impacts beyond farm health, including improved public health, environmental justice, better labor conditions, and greater community resiliency. The farm encapsulates the full community of plants, animals, and people that form its ecosystem.

Regenerative farming has some overlap with “sustainable agriculture” and “agroecology,” related paradigms that have agronomic, academic, and practitioner adherents. Certain practices within these three categories were supported in statute with the passage of the Organic Foods Production Act in 1990. The practices most associated with regenerative agriculture include crop diversification and rotation, cover cropping, low-to-no tillage, rangeland and cropland composting, use of biochar, reduced chemical inputs, managed grazing, integration/re-integration of crop-livestock systems, agroforestry, restoration of riparian habitats, and nutrient management. Beyond carbon capture, co-benefits include improved soil quality,¹¹ higher long-term yields and greater yield stability,¹² resilience to drought, floods,¹³ disease, and pests,¹⁴ lower nitrate levels in groundwater,¹⁵ improved air quality, and nutritionally richer crops.¹⁶ Any of these benefits would be meaningful as standalone improvements. But when measured against the threat of urban sprawl and emissions that result from the development of agricultural lands, the true impact is even greater. There is potential for the private market to increasingly recognize that improved soils result in higher property values through greater resiliency and the ability to support higher-value organic production.

While a small but growing minority of farmers and ranchers are interested in regenerative practices—as shown by

over-subscription to existing incentive programs—producers face a unique set of economic and technical constraints that make rapid transition challenging and risky. Without external support, upfront costs to transition are a disproportionate barrier for young and marginalized growers. Increasing land costs have made it difficult for growers to purchase the land they farm, leading to financial insecurity and lower incentives to invest in practices that lead to long-term farm health.¹⁷ Obstacles to land



The dominant way that humans interact with the planet is through agriculture. As an ecologist, I come at this from the perspective that we cannot conserve biodiversity without looking at working land. We have an opportunity to be part of the climate solution, even if it just means doing less harm.

Elizabeth Porzig, Working Lands Director
Point Blue Conservation Science



11 Rhodes, Christopher J. “The Imperative for Regenerative Agriculture.” *Science Progress* 100, no. 1 (March 1, 2017): 80–129. <https://journals.sagepub.com/doi/abs/10.3184/003685017X14876775256165>.

12 Woodard, Joshua D. and Leslie J. Verteramo-Chiu. “Efficiency Impacts of Utilizing Soil Data in the Pricing of the Federal Crop Insurance Program.” *American Journal of Agricultural Economics* 99, no. 3 (April 2017): 757–772. <https://academic.oup.com/ajae/article-abstract/99/3/757/3092227>.

13 Basche, Andrea. “Turning Soils into Sponges: How farmers can fight floods and droughts.” Union of Concerned Scientists, August 2017. <https://www.ucsusa.org/resources/turning-soils-sponges>.

14 LaCanne, Claire E. and Jonathan G. Lundgren. “Regenerative agriculture: merging farming and natural resource conservation profitably.” *PeerJ* 6 (February 2018). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5831153/>.

15 Lawniczak, Agnieszka Ewa, Janina Zbierska, Bogumił Nowak, Krzysztof Achtenburg, Artur Grześkowiak, and Krzysztof Kanas. “Impact of agriculture and land use on nitrate contamination in groundwater and running waters in central-west Poland.” *Environmental Monitoring and Assessment* 188, no. 3 (February 2016): 172. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4757607/>.

16 Rodale Institute. “Regenerative Organic Agriculture and Climate Change: A down-to-earth solution to global warming.” 2014. <https://rodaleinstitute.org/wp-content/uploads/rodale-white-paper.pdf>.

17 Diop, Amadou Makhtar. “Sustainable Agriculture: New Paradigms and Old Practices? Increased Production with Management of Organic Inputs in Senegal.” *Environment, Development and Sustainability* 1 (September 1999): 285–296. <https://doi.org/10.1023/A:1010026922142>.

tenure are particularly challenging for farmers given their already-low profit margins. American farmers take home only eight cents for every dollar worth of food they produce.¹⁸ The increased frequency and intensity of extreme weather events related to climate change make farming even more financially precarious. Policies and private-sector interventions must address the business realities of farming to be effective in supporting them.

Recommendations

I. Develop a More Robust Research Base

Regenerative agriculture is a systems-based approach, which complicates measurement and quantification. It requires a holistic understanding of the farm as an ecosystem, and of the farmer as a partner with long-term natural processes. Translating this complex concept into terms that are recognizable to policymakers and investors is difficult but not impossible. Instead of relying on a single definition or measurement technique, industry leaders and researchers could establish a spectrum of measurement that offers different points of entry and reflects the diverse realities of farmers and funders. For example, the US Department of Agriculture's Natural Resources Conservation Service (NRCS) could help set a minimum viable baseline standard of measurement. That standard could then be adjusted regionally, but would provide a starting point for state and federal policy and programs. The NRCS and other USDA agencies can also make significant contributions by increasing the accessibility and transparency of existing data in their domains.

A robust research base has already established the many benefits of regenerative practices. To realize the benefits of this research, government and the private sector should invest in R&D focused on assessment frameworks and help to determine the best strategies for assessing incentive program eligibility. This research can unfold in tandem with existing policy and private market interventions. Protocols for measurement can be iterative,



Part of regenerative agriculture is to re-complex our agricultural landscapes. We want to measure all parts of that complexity, and that presents a challenge. Getting people to monitor is the environmental equivalent of getting people to eat their vegetables. Everyone knows it's good, but no one wants to do it.

Elizabeth Porzig, Working Lands Director
Point Blue Conservation Science



adjusting as more research is available. Policymakers should ensure that farmers are not left with the sole burden of monitoring when they are already investing substantial time and money into shifting their practices.

Monitoring Versus Research

Policymakers, academics, and investors must distinguish between monitoring and research. Monitoring is more pragmatic and accessible than peer-reviewed studies, and also less rigorous. It is appropriate for determining access to policy and program incentives and may involve reporting on a certain set of pre-certified practices or environmental indicators, like groundwater nitrate levels. In contrast, research requires experimental design and peer review, and tends to “narrow the aperture, leading to more opportunities for inference.”¹⁹ Formal research institutions should focus on measuring how specific practices affect outcomes and quantify their impacts

¹⁸ Economic Research Service. “Food Dollar Series.” United States Department of Agriculture. <https://www.ers.usda.gov/data-products/food-dollar-series/documentation.aspx>.

¹⁹ Elizabeth Porzig, Working Lands Director at Point Blue Conservation Science, interview with the author, August 5, 2020.



down to the molecular level in the soil, especially in terms of carbon sequestration—and how it differs by soil type, geography, and methods. Subsequent findings can then better establish which methods lead to the greatest positive impacts in terms of carbon sequestration and other outcomes. Because yield variability is the official measure of risk for the USDA Risk Management Agency (RMA), crop insurance plans should recognize specific regenerative practices that have been shown to lower that variability and reward growers for adopting them. Carbon markets that are open to farmers should pay farmers who either utilize certified practices associated with soil carbon capture or document carbon sequestration using software (like COMET-Farm and the Cool Farm Tool). As we learn more about yield variability and resilience, metrics that establish eligibility for government or private-market funding should be no more stringent than traditional insurance and investment policies so as not to unfairly burden this new sector of agriculture. In some cases, there must be a specific focus on lowering measurement hurdles that currently exclude many farmers from receiving these incentives. The subsequent recommendations will offer details relevant to each proposed intervention that will address specific strategies to ease access for regenerative growers.

A Tiered Approach to Measurement

More robust tracking of practices and outcomes can help farmers qualify for advanced incentives that might otherwise rely on a more formal measure of risk or carbon capture. Existing coalitions could establish a framework of well-researched practices that would allow farmers to become eligible for incentive programs. In the process, they should pay special attention to farmers who are not in those coalitions due to lack of information, resources, or other barriers. Qualifying for these incentives should not be substantially more onerous than existing requirements for commodity farmers currently receiving crop insurance or loans. Parameters should also be updated and refined as the science and monitoring systems offer further insights.

A sustainable, continuous learning-based approach is most equitable and aligns best with the systems lens that underpins regenerative agriculture. Aria McLauchlan, co-founder and executive director of Land Core, points out that assessing “farmers on marginal lands and beneficial soils equally” is not sound.²⁰ Existing programmatic and regulatory infrastructure should support farmers in tailoring regenerative practice plans for their farms, with longer-term public and private funding contingent on these plans. Soil and water conservation districts already

²⁰ Aria McLauchlan and Harley Cross of Land Core, interview with the author, June 17, 2020.

guide farmers in the development of water and land management process plans. The NRCS follows a similar model, with a formal process plan for each conservation project. Kendra Kimbirauskas, agriculture and food systems director at the State Innovation Exchange, says this model would offer both flexibility and rigor: “Whether you’re a huge rancher in Wyoming, or an urban farmer, you’re developing a holistic plan for whatever land you have under your management.”²¹ Regional communities of practice could work with farmers to add to the community’s cumulative knowledge and create process plans specific to local ecology and weather patterns. Process plans would also allow farmers to include, and earn rewards for, other forms of stewardship such as good labor practices or succession plans for the next generation of growers.

Ranchers, farmers, and researchers are best positioned to determine feasible monitoring protocols that align with the needs of funders. Relevant biological and economic markers will depend on the specific projects and incentives under development in each state, but potential parameters include:

- Soil carbon
- Yield quantity and variability
- Crop value (possibly at macroeconomic level)
- Profit margins and variability (upside and downside potential)
- Change in greenhouse gas emissions, including machinery and transportation use
- Emissions avoided by preserving agricultural land
- Water quality
- Soil health
- Air quality
- Crop nutrition density
- Resilience to flood, drought, and pests
- Yield recovery time after adverse weather event

Formal research also opens a window for funding. Payments to farmers who participate in demonstration projects and studies could jumpstart their transitions. Academics applying for grant funding should make a concerted effort to bring in farmers from diverse

backgrounds, which would both increase farmer access to opportunities and ensure subsequent research findings help a wide range of growers.

II. Reform Crop Insurance

Growers looking to implement regenerative practices face high up-front costs and often shoulder the full risk of this transition. When it comes to encouraging this shift, federal reform efforts have most often focused on the Conservation Title in the Farm Bill, which rewards farmers for practicing conservation activities. Crop insurance has been overlooked in this context. To some degree, this policy choice is understandable: reform is difficult because any changes to the risk model require formal proposals that are costly, work-intensive, and depend on robust actuarial data. But it remains a significant opportunity. Federal crop insurance is a \$9 billion per annum program that covers over 350 million acres of agricultural lands in the United States, or 80 percent of arable acreage.²² If the RMA were to recognize the

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Crop insurance and conservation tend to clash due to the lack of collaboration between RMA and NRCS, and this prevents farmers from adopting conservation practices, because you can lose your insurance if you don’t follow very strict guidelines.

Candace Spencer, Policy Specialist
National Sustainable Agriculture Coalition

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²¹ Kendra Kimbirauskas, agriculture director at the State Innovation Exchange, interview with the author, July 30, 2020.

²² O’Connor, Claire, and Lara Bryant. “Covering Crops: How Federal Crop Insurance Program Reforms Can Reduce Costs, Empower Farmers, and Protect Natural Resources.” Natural Resources Defense Council, December 2017, 2. <https://www.nrdc.org/resources/covering-crops-how-federal-crop-insurance-program-reforms-can-reduce-costs-empower-farmers>.



Current insurance rates are calculated based on historical yield. We understand that farming can be extractive and mine what resources there are—and looking back doesn't necessarily tell you what's left.

Harley Cross, Co-Founder
Land Core



lowered risk associated with regenerative farming, they could incentivize more insured farmers to transition to regenerative farming, while widening eligibility for regenerative growers who are not yet insured.

Existing crop insurance programs tend to favor large-scale conventional growers cultivating commodity crops like corn and soy. Conversely, lack of access to this insurance puts smaller, diversified, and regenerative growers at a disadvantage—and locks conventional farmers into their current cropping patterns and practices that can be insured. The federal crop insurance program can recognize the reduced risk of regenerative practices by adjusting their insurance model to promote them. More specifically, the RMA could account for the greater yield stability and increase in crop value²³ of regenerative farms by expanding crop insurance access and lowering rates. Over the last five years, groups including the AGree Economic and Environmental Risk Coalition and the NRDC have worked to reform crop insurance to drive broader adoption of

agricultural conservation.²⁴ The National Sustainable Agriculture Coalition has also successfully achieved adjustments to the crop insurance program. They have strengthened the recently established Whole-Farm Revenue Protection program, which allows diversified growers to insure their entire farm rather than just individual commodity crops. They also worked within the US Department of Agriculture's Farm Production and Conservation mission area (which includes NRCS, RMA, the Farm Service Agency, and the Farm Production and Conservation Business Center) to refine the cover cropping termination guidelines. Finally, they successfully advocated for the inclusion of cover crops in the crop insurance program's "Good Farming Practices," making it easier for producers to use this practice without fear of jeopardizing their insurance coverage.²⁵ The nonprofit Land Core has been working with actuarially sound data on yield variability and recovery rates to create an independent modeling tool to determine risk for crop insurers and lenders. To be effective, future efforts should occur in collaboration with existing coalitions spearheaded by AGree and other advocacy groups. Greater advocacy from state legislators and governors to federal policymakers would be particularly effective at driving more rapid reform.

Once the actuarial case has been made, RMA could make the following changes to account for the lower risk of regenerative farming:

Reflect the reduced risk of regenerative growing through lower rates.

Since regenerative growing is associated with lower risk, the RMA should account for that benefit by adjusting their risk model. The RMA could extend beyond cover cropping to recognize the combination of practices that contribute to lower risk, which will be defined through existing research efforts spearheaded by AGree. Recognizing practices other than cover cropping will also make crop insurance more accessible to a wider range of growers from diverse geographies.

²³ Oldfield, Emily E., Mark A. Bradford, and Stephen A. Wood. "Global meta-analysis of the relationship between soil organic matter and crop yields." *SOIL* 5 (2019): 15–32. <https://doi.org/10.5194/soil-5-15-2019>. See also: Bowles, Timothy M., Maria Mooshammer, Yvonne Socolar, Francisco Calderón, Michel A. Cavigelli, et al. "Long-Term Evidence Shows that Crop-Rotation Diversification Increases Agricultural Resilience to Adverse Growing Conditions in North America." *One Earth* 2, no. 3 (March 2020): 284–293. <https://doi.org/10.1016/j.oneear.2020.02.007>.

²⁴ Todd Barker, senior partner and practice director at the Meridian Institute, interview with the author, August 11, 2020.

²⁵ Candace Spencer, policy specialist at the National Sustainable Agriculture Coalition, interviews with the author, July 28 and 30, 2020.

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The challenge with cover cropping as it's being done in the Midwest is that it's still highly chemical and GMO intensive. Yes, it's great we're not tilling, but we're still dropping a ton of pesticides on crops to kill the weeds. If we're going to try to reform crop insurance to make cover cropping more acceptable, we can't overlook the issues of using lots of synthetic fertilizers and pesticides and the negative impacts on the water and soil.

Kendra Kimbirauskas, Director of Agriculture and Food Systems, State Innovation Exchange

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Incorporate regenerative practices into the RMA's Good Farming Practices (GFP) handbook.

Beyond cover cropping, additional regenerative practices supported by actuarially sound data should be included in the RMA's Good Farming Practices guidelines. Currently, farmers may be ineligible to receive an indemnity when they experience a loss if they use regenerative practices outside the scope of GFP standards. But the inclusion of these practices would give equal protection to regenerative farmers. A starting point would be including all of NRCS's approved conservation methods.

Increase awareness among farmers and insurance agents of Whole-Farm Revenue Protection.

Whole-Farm Revenue Protection was introduced in the 2014 Farm Bill and supports diversified non-commodity operations. However, it currently makes up only 3 percent of crop insurance liabilities.²⁶ Crop insurance agents don't consistently offer whole-farm insurance to the farmers they serve. Better agent training on this program could motivate them to highlight this program to farmers. Covering crops beyond commodities like corn and soy will not just benefit the environment and diversified farms but have positive effects on farmers of color who are more likely to grow diverse mixes of crops that RMA has not insured in the past.²⁷



PHOTO BY MARK LIPSON

26 Risk Management Agency. "Federal Crop Insurance Corporation Commodity Year Statistics for 2017." US Department of Agriculture. https://www3.rma.usda.gov/apps/sob/current_week/insplan2017.pdf.

27 National Agricultural Statistics Service. See 2017 Census reports on Black, Hispanic, Asian, and American Indian/Alaska Native Producers. <https://www.nass.usda.gov/Publications/Highlights/index.php>

Improve data-sharing across RMA, NRCS, and FSA.

While NGOs and universities are engaged in efforts to document the impact of regenerative practices on risk, better data sharing among agencies would expedite the process of establishing this actuarial impact. However, ‘silozation’ and resulting communication breakdowns between USDA agencies remain ongoing problems.

Adjust the prevented planting claims policy to protect farmers with partial planting losses.

The prevented planting policy covers farmers when weather conditions prevent them from planting a crop by the date stipulated in their crop insurance policy. The current model incentivizes farmers to plant nothing in years when they expect lower yields, as opposed to simply planting later.²⁸ The federal government should retool this policy to incentivize partial planting when farmers have the ability.

Reform the yield exclusions policy.

The yield exclusions policy allows farmers to strike bad years from their yield history when establishing a crop insurance policy and rate. The existing policy incentivizes farmers to grow higher-risk crops, because they can strike up to 15 years of bad yields from their growing history. This policy perversely encourages farmers to use methods and crops that are no longer responsive to shifts in soil, weather, or other factors, even as yields dwindle. Federal leaders should adjust the policy to more accurately account for real yields, while still protecting farmers during outlier years.

Reform revenue protection plans to avoid driving crop value down.

The existing structure of revenue protection plans incentivizes higher levels of monoculture production, which in turn lowers commodity prices and triggers insurance payments at great expense to taxpayers. (Payments for commodity growing through Title I of the Farm Bill, which subsidizes and protects prices for



There’s a lack of pragmatism currently embedded into the system. If the RMA and finance sector could quantify that difference [in risk], they’d have to admit they’re throwing money away at the cost of taxpayers and investors.

Harley Cross, Co-Founder, Land Core



certain commodity crops, also contributes to this market distortion.)²⁹ Placing caps on payments and incentivizing yield-based plans based on regenerative practices would help resolve this problem.

While federal reform efforts remain protracted, state governments can make immediate improvements. Iowa’s premium subsidy pilot offers one model. In 2017, the Iowa Department of Agriculture and Land Stewardship partnered with the federal RMA to offer an additional \$5/acre subsidy to farmers who used cover crops the previous year.³⁰ The Illinois Department of Agriculture set up a similar program in 2019.³¹ These programs were the result of advocacy by a range of local and national groups, including the Practical Farmers of Iowa, Iowa Farmers Union, Iowa Environmental Council, NRDC, and American Farmland Trust and related stakeholder/advisory committees, which included over 10 different organizations including the Illinois Corn Growers Association. This model could be used to encourage other forms of regenerative agriculture at the state level.

²⁸ O’Connor and Bryant, “Covering Crops,” 3.

²⁹ For more information on Title I of the Farm Bill, please see the Congressional Research Service’s “2018 Farm Bill Primer: Title I Commodity Programs.” <https://crsreports.congress.gov/product/pdf/IF/IF11164> (accessed September 15, 2020).

³⁰ O’Connor and Bryant, “Covering Crops,” 2.

³¹ Lara Bryant, deputy director of the Natural Resources Defense Council, interview with the author, August 7, 2020.



The program is limited in that it only serves farmers who are currently enrolled in federal crop insurance. States could partner with private insurers to expand these efforts by offering new crop insurance products to growers whose crops are not currently insured at the federal level—working with greater agility than would be possible on the federal level. Considering the current economic hardships faced by many state governments, the federal government should provide matching funds for these state pilots. The federal government could also adjust subsidy levels, offering higher subsidies for land using cover crops, crop rotation, and other beneficial practices. Philanthropists and corporate funders could help fill funding gaps in order to develop case studies for regenerative insurance that inform eventual reforms at the federal level.

III. Redefine Risk

Just as federal crop insurance should modify actuarial models to recognize the lower risk associated with regenerative farming, lenders and businesses can account for these positive external benefits as potential sources of long-term revenue in their financing and payment structures. Policymakers and lenders have an opportunity to seize on this momentum by providing

vital capital to growers that reduces risk for all parties. Resources like AGree's coalition of nonprofits, research centers, farmers, and corporations are translating findings on the actuarial risk of crop insurance reform for the finance sector.

Two critical opportunities would pave the way for wide-scale financing and funding of regenerative projects: a private-market certification for regenerative growing akin to LEED and greater access to carbon markets for growers.³²

A branded private sector solution similar to LEED would help investors account for regenerative agriculture's lower investment risk by decreasing the interest rate on loans by an eighth or quarter point, or offering zero-interest loans. Instead of a rated score that would over-simplify the regenerative process, this system could rely on carbon-measurement tools and a selection of certified practices that growers could tailor to their specific growing needs. Beyond decreased interest rates, investors could incorporate reduced risk and increased benefits in longer-term loans and credit enhancements, as well as targeted investments in farmer cooperatives to widen availability for smaller operations.

³² Leadership in Energy and Environmental Design (LEED) is a private-market rating system for green buildings that allows builders and investors to contribute to environmental sustainability; make their buildings more energy efficient and healthy in the long run; distinguish themselves from competitors; and receive financial incentives, such as lower interest rates on loans, for their sustainable practices.

Innovative organizations like Land Core are already developing a modeling tool that could be used in this kind of rating system and facilitate connections between growers' practices and new incentives from funders. In light of the surge in environmental, social and corporate governance (ESG) investing, more mainstream investors may find this sector attractive.³³ They may also determine, as Land Core co-founder Harley Cross stated, that investments in conventional "industrial cropping systems are not as safe for their own returns." ESG investing and impact-oriented land investment have tremendous potential but could use more coordination with the public sector. This is especially true in the agricultural space, which lacks the kind of professional associations that drove the adoption of LEED in the construction and development industries. To boost these efforts, state governments could provide credit enhancements to reduce risk for bankers.

California leaders could pilot these efforts. The state government has a history of acting as a loan guarantor for other programs, the risk is actuarially determinable, and this policy would contribute to the state's goal of reaching carbon neutrality by 2045.³⁴ In lieu of points, this certification system could rely on a series of indicators for soil health practices that lower yield variability, which is the existing



Once capital investment is made on an ongoing basis the projects work.

John Eisenhut
California Air Resources Board



We need to incentivize the long-term approach and ensure that a market will exist when the product comes to market.

Gabe Santos, Co-Founder
Homestead Capital



measure of agricultural risk. Coalescing private-sector efforts in this manner, through a unifying brand with government support, would increase the scale and cohesion of this intervention.

Increased access to carbon markets and other credit-trading systems would also help make the transition to regenerative agriculture financially feasible for growers. A number of private entities—including Ecosystem Services Market Consortium and Nori—are working to develop private markets for agricultural carbon credits that directly pay farmers for carbon sequestration. The Growing Climate Solutions Act would create a certification system for farmers entering existing carbon markets. They would also benefit from access to other credit systems that account for co-benefits, such as wetlands and endangered species credits. Innovative models that tie these payments to practices that carry their own environmental benefit are particularly promising. San Jose, California, is evaluating a promising model: a system that connects regenerative farming on the border of urban land to infill development in the city, a win for farmers and developers. This program also creates a greater environmental impact by incentivizing regenerative practices while interrupting urban sprawl.³⁵

³³ Shu-Yang Tan, in conversation at the BFI/CLEE roundtable, June 3, 2020.

³⁴ Mulkern, Anne C. "Can California Achieve a 'Carbon Neutral' Economy?" *ClimateWire*, September 12, 2018. <https://www.scientificamerican.com/article/can-california-achieve-a-ldquo-carbon-neutral-rdquo-economy/>.

³⁵ An example of some agricultural considerations in San Jose, California, land-use planning can be found on pages 8-9 of the planning memorandum found at <https://www.sanjoseca.gov/home/showpublisheddocument?id=65782>



Finally, voluntary ecosystem services markets could incentivize regenerative agriculture adoption, as long as they are designed to avoid perverse consequences. An increasing number of private food and agriculture companies are making voluntary commitments to improve the sustainability of their supply chains, and regenerative agriculture can contribute to those goals. Voluntary markets that allow supply chain actors to pay producers for verified benefits such as carbon sequestration, greenhouse gas reduction, water quality and quantity benefits, should be encouraged. It is critical that such programs are accessible to all types of farmers, and features like technical support for entry into the program and minimizing costs of verification will help make that possible. Safeguards are also necessary to prevent ecosystem services payments from triggering the financialization of farmland in ways that increase land values and ultimately prevent farmers from maintaining profitable operations and transitioning to regenerative agriculture.

IV. Advance State-Level Policies

Additional investment in state-level policies that ease the transition to regenerative agriculture is as important as crop insurance reform, innovations in lending, and direct payments. State programs focused on regenerative farmers open up additional funding opportunities and also create opportunities for access to infrastructure, technical assistance, and information networks.

In California alone, the Sustainable Agricultural Lands Conservation Program (SALC),³⁶ State Water Efficiency and Enhancement Program (SWEET),³⁷ Biologically Integrated Farming Systems Program (BIFS),³⁸ and Healthy Soils Program (HSP)³⁹ have demonstrated success and are over-subscribed. SALC has been effective at protecting land and preventing development, which is critical in a state where 40,000 acres of farmland are lost every year to urban

³⁶ Administered by the California Strategic Growth Council, the Sustainable Agricultural Lands Conservation Program protects agricultural lands from urban sprawl. <https://sgc.ca.gov/programs/salc/>.

³⁷ The California Department of Food and Agriculture's Office of Environmental Farming & Innovation administers the State Water Efficiency and Enhancement Program, which offers grants to farmers seeking to implement irrigation systems that lower greenhouse gas emissions and water use. <https://www.cdafa.ca.gov/oefi/sweet/>.

³⁸ University of California Agriculture & Natural Resources ran Biologically Integrated Farming Systems Program, which supported demonstration projects featuring sustainable growing practices. The project found that farmers will adopt these practices as long as their yields and profits remain the same. The current version of BIFS is managed by the California Department of Food and Agriculture. <https://www.cdafa.ca.gov/oefi/opca/bifs.html>.

³⁹ The Healthy Soils Program, part of the California Department of Food and Agriculture, funds demonstration projects and incentives to adopt practices that sequester carbon in the soil. <https://www.cdafa.ca.gov/oefi/healthysouls/>.

sprawl.⁴⁰ State leaders could expand SALC to include regenerative farming practices on preserved land. BIFS, which has an existing farmer network set up to share pest management systems, could be expanded and used to exchange other smart agriculture techniques. In addition, bridging these programs and other state-level initiatives could benefit the regenerative agriculture sector. For instance, Local Agency Formation Commissions (LAFCOs), local regulatory and planning bodies in all 58 California counties, could include farmland preservation and the promotion of regenerative agriculture in their plans to meet the greenhouse gas reduction targets set by the California Air Resources Board. CalRecycle could improve systems for farmers to access commercial compost, while creating new jobs to implement these efforts. The California Department of Food and Agriculture could offer grants through existing programs that cover the cost of equipment needed to transition to regenerative agriculture.

Efforts outside of California run the gamut depending on the agricultural and political realities in each state. Minnesota, Iowa, and Illinois are engaged in efforts to incentivize cover cropping through legislation. New Mexico and Colorado introduced state advisory councils to look at regenerative agriculture policies. Other states established healthy soils departments within their food and agriculture departments or hired researchers to measure the impacts of investment in farmers building better soil. There is no one-size-fits-all solution, but wherever a state may stand on the spectrum of reform, they should consider dedicating additional resources to these efforts. Finally, the National Healthy Soils Policy Network connects organizations across the country to institute policies that support regenerative farming. Outreach by this coalition to states with weaker policies could be especially effective in moving the needle on regenerative agriculture.

While state policy offers more flexibility and specificity than federal approaches, funding is a challenge, especially given the pandemic. As of July 2020,



PHOTO BY WILL BRINKERHOFF

COVID-19 created a \$650 billion loss across state legislatures, which means scant resources to allocate in the next legislative session.⁴¹ States legislators could think creatively to fill existing gaps in funding and direct additional support to these programs. One salient opportunity is via existing Natural Resources Conservation Service (NRCS) funds. USDA directs NRCS funding to states through state conservationists, who coordinate natural resource conservation projects in their states. To determine fund allocation, state conservationists convene a technical advisory committee and identify ecosystems that need support. State legislatures could direct conservationists to invest this funding in degraded farmlands that would benefit from regenerative practices. Another opportunity lies in public-private partnerships. For example, the nonprofit Zero Foodprint's Restore California program works with restaurants and other food industry stakeholders to direct funds to healthy soils practices in partnership with the California Department of Food and Agriculture and the California Air Resources Board.⁴²

⁴⁰ California Department of Conservation, "Fast Facts." <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Fast-Facts.aspx>.

⁴¹ Kendra Kimbirauskas interview, July 30, 2020.

⁴² For more information on this program, please see the California Air Resources Board website. <https://ww2.arb.ca.gov/news/cdfa-and-carb-launch-public-private-partnership-advance-carbon-farming> (accessed September 15, 2020).

In addition, Western states with fire risk could direct fire-management funding to pay farmers to graze high-risk regions, as they might pay for conventional mitigation measures like cutting brush to decrease fuels. As the State Innovation Exchange's agriculture director notes, this model is a "win for ranchers, ecosystems, and states" and a "great opportunity to protect communities from fire."⁴³ In the absence of surplus funds to support grant programs, state governments could offer tax incentives to growers. Private funders have an important role to play as well. Philanthropists and investors can support farmers directly through grants, loans, and credit-trading payments, and they can also fund state-level infrastructure that aids regenerative growers. For instance, regenerative farmers are in dire need of



COVID demonstrated just how fragile the corporate food system is. It was the first time in a while that Americans went to a grocery store and there wasn't meat on the shelves, or it was rationed. This is an opportunity to think about relocalizing food supply chains. Having regenerative food systems with adequate processing infrastructure allows us to get food to people.

Kendra Kimbirauskas, Agriculture Director
State Innovation Exchange



regional processing facilities to get products to market more efficiently, and private funders can help fill that gap. States could also issue tax incentives to help fund regional processing infrastructure development. Creative solutions like these can offer substantial opportunities for funding at the state level to put towards producers who are growing food while responding to climate change.

Finally, state-level economic recovery task forces could recognize the opportunity for regenerative agriculture to act as an economic stimulus that also builds regional resiliency, offers environmental benefits, and improves public health during a time of global recession and crisis. Each task force could include farmers and policymakers who can drive recovery efforts that include resources for farmers transitioning to regenerative agriculture. COVID relief monies from the federal government can also support farmers offering this service to the community. However, agriculture, forestry, and fishing combined have only received 1.5 percent of Paycheck Protection Program monies as of July 2020.⁴⁴ Farming advocates and state policymakers should fight for farmers to receive a fair share of stimulus support, especially given the essential nature of their work.

V. Prioritize Equity in Agricultural Policies

Because farmers often suffer from a deficit of financial resources and time, those who want to transition to regenerative practices may not have the capacity to pursue much-needed resources. Marginalized growers face even greater barriers. Elizabeth Porzig, Working Lands Director at Point Blue Conservation Science, points to both "historical patterns of marginalization" and contemporary reporting requirements and application hurdles as contributors to inequitable access.⁴⁵ Institutional racism, as well as larger structural discrimination, put significant strain on farmers of color, despite the fact that many Black, Indigenous, and other farmers of color possess knowledge about regenerative growing that spans generations. These structural

⁴³ Kendra Kimbirauskas interview, July 30, 2020.

⁴⁴ Farm Bureau. "Farm Bureau Asks Senate to Expand Access to PPP for Farmers." *Market Intel*, July 14, 2020. <https://www.fb.org/news/farm-bureau-asks-senate-to-expand-access-to-ppp-for-farmers>.

⁴⁵ Elizabeth Porzig interview, August 5, 2020.



PHOTO BY PHIL HOGAN

Adam Cline, former farm manager of Yocha Dehe Wintun Nation discussing soil with Nick Gallagher of USDA-Natural Resources Conservation Service and Wendell Gilgert of Point Blue Conservation Science

inequities were evident most recently in the challenge smaller and more diversified farmers,⁴⁶ as well as farmers of color, faced in accessing federal stimulus funding.⁴⁷ Building integrated systems with support mechanisms like dedicated staff can create a more efficient and equitable distribution of resources. Lenders or investors should also consider increasing initial payments to justify the time investment for small or medium-sized farms.⁴⁸

Integrated technology is a critical first step. Both policymakers and advocates should invest in building centralized farmer-facing tools and developing data-tracking practices that improve interagency information sharing. Agency leadership at USDA have considered the potential of a one-stop portal where farmers can access information about transitioning their land through regenerative practices and see the full spectrum of resources available—from lower crop insurance

rates to state-level grants and technical assistance.⁴⁹ Better data sharing is also of great importance. Until recently, Section 1619 of the Farm Bill, which covers FOIA requests for geospatial farm data, has prevented USDA from sharing field-level data with other agencies or research institutions. The Meridian Institute, the nonprofit behind AGree's coalition, recently succeeded at getting language in the Farm Bill to share this information with select research institutions studying how regenerative agriculture affects risk. Greater data sharing between government agencies would enable leaders and academics to more rapidly build a research base on regenerative agriculture. Meanwhile, farmers who share data with USDA in an automated fashion could be relieved of certain monitoring protocols, like frequent surveys. Greater cohesion in data tracking would also mean farmers can be verified for multiple programs without having to continually share new data or applications. The National Sustainable Agriculture Coalition is working on this effort within the Whole-Farm Revenue Protection program to allow other forms of records, like organic systems plans from organic certification applications, to support an application for Whole-Farm Revenue Protection. They are also working to foster collaboration between Whole-Farm and the Noninsured Crop Disaster Assistance Program (NAP), one of the few programs that provides disaster assistance to specialty crop growers, to utilize records from NAP for Whole-Farm.⁵⁰ Similarly, private actors developing risk-assessment tools aim to connect eligibility for lower crop insurance rates with access to lower interest loans and other financial benefits. State governments are also working to reduce hurdles that burden small and under-represented farmers. For instance, the California Department of Food and Agriculture has responded to calls from farmers and nonprofits to simplify the Healthy Soils Program application process by partnering with the state

46 US Government Accountability Office. "USDA Market Facilitation Program: Information on Payments for 2019. Briefing to the Senate Committee on Agriculture, Nutrition, and Forestry." May 28, 2020. <https://www.gao.gov/assets/710/708942.pdf>.

47 Reiley, Laura. "Young farmers and farmers of color have been shut out of federal assistance during the pandemic." *Washington Post*, July 16, 2020. <https://www.washingtonpost.com/business/2020/07/16/cfap-ppp-farmers-coronavirus/>.

48 Wozniacka, Gosia. "Are Carbon Markets for Farmers Worth the Hype?" *Civil Eats*, September 24, 2020. <https://civileats.com/2020/09/24/are-carbon-markets-for-farmers-worth-the-hype/>.

49 Todd Barker, senior partner and practice director at the Meridian Institute, interview with the author, August 11, 2020.

50 Candace Spencer, policy specialist at the National Sustainable Agriculture Coalition, interviews with the author, July 28 and 30, 2020.

cooperative extension service to set up a network of regional technical assistance providers. As Elizabeth Porzig of Point Blue notes, “You shouldn’t need a grant writer to get one of these out the door.”⁵¹

Dedicated staff who can better support farmers would also ensure a more equitable delivery of resources. In the same way a public benefits case worker might gather a portfolio of resources for a client while at the same time providing assistance with the application itself, state governments can create jobs focused on aiding farmers. Cooperative extension programs at agricultural universities already play this role to some degree and, with support from the private sector, could invest in more staff with exclusive responsibility to support new and existing regenerative growers. They can help bundle incentive programs, determine cross-eligibility, guide the application process, and hold agencies accountable to reaching a more diverse base of farmers. Critically, institutional processes could ensure additional support for marginalized and small-scale growers, who generally operate on margins too small to pay consultants.

Existing NRCS agents, who are currently deployed in almost every county across the US, could also act as regenerative farm advisors, offering detailed, customized technical assistance to growers looking to transition. This effort would connect with their current work assisting farmers as they enroll in federal conservation programs. NRCS already has specific programs and payment rates targeted to new farmers and could extend this to other marginalized groups in their role as regenerative advisors. States could also tap into other existing resources—like resource conservation districts (RCDs), in California, or county Farm Service Agency offices—to increase the level of assistance available to farmers and develop more effective farmer networks. Funding more RCD staff to help with monitoring would also lighten the load for farmers. Expanded funding of these existing roles would be both more effective and cost-efficient than creating entirely new departments. Generating connections between these different institutions, as well as private technical support providers, would make for an even



more powerful network for farmers. These support networks would also act as a safety net for farmers not receiving the same program access or quality of service due to their race, their primary language, or the place where they farm. Of course, in addition to dedicated staff, agencies and funders must integrate equity into program design, and audit programs against program access goals.

In addition to access, representation is critical. Farmers and farm workers of color need to have a greater say in the policy and investment mechanisms that scale regenerative agriculture. Institutions that are guiding these processes should not just survey growers as they design programs, but include them on boards, committees, and other decision-making bodies. In particular, indigenous farmers who have farmed regeneratively for millennia should be invited to lead this transition, rather than relegated to the sidelines. Deeper structural change will also expand the role that socially disadvantaged⁵² farmers play in land management. Better access to land tenure is critical, as well as systematic policy efforts that direct resources to marginalized growers. Improved collaboration between environmental, housing, and farmer advocates can bridge these efforts to support structural change. The lift might be great and the road long for such reform efforts, but glimmers of hope are already apparent in such models as California’s 2017 Farmer Equity Act,

⁵¹ Elizabeth Porzig interview, August 5, 2020

⁵² According to the NRCS, a disadvantaged farmer is “A farmer/rancher who has been subjected to racial or ethnic prejudices because of their identity as a member of a group without regard to their individual qualities.” Source: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_029652.pdf.



PHOTO BY ADP FARM

which mandated the inclusion of socially disadvantaged farmers in agricultural policy development and implementation, while expanding program access.

VI. Urge Landowners and Supply Chain Actors to Enable Regenerative Production

For farmers who want to transition to regenerative agriculture, a lack of land tenure and lack of support from supply chains can prevent them from doing so. In California, approximately 47 percent of agricultural land is tenant farmed, which highlights the need for landowners to consider providing tenants longer terms so that multi-year changes can bear fruit. Landowners can make lease agreements that require the use of regenerative practices and could choose to prioritize farmers who manage their farms in ways that benefit the land. They could also provide more favorable lease terms or prices in exchange for the investment that farmers make in regenerative agriculture, which improves the land and can also generate ecosystem service payments through healthy soils or carbon farming programs. To achieve changes like these, education and outreach programs must also include landowners as a critical target audience. For instance, one program in the US Midwest tailors conservation programs for women who are non-

operator landowners. These women own half of the farmland but don't participate in conservation decisions as much as men who are non-operator landlords. After participating in women-only conservation field training, women non-operator landowners were substantially more likely to engage with tenants on decisions to implement conservation practices.⁵³

Emerging institutional opportunities that shift leasing norms are critical and can be structured as land trusts or easements that maintain agricultural status for perpetuity. Institutional and legal support for alternative ownership structures like grower cooperatives—in which producers own a collective stake in the farm business—could also help spur transitions to regenerative agriculture.

Supply chain actors, including input suppliers, processors, and retailers, can also play a significant role in the transition to regenerative agriculture, considering the urgency of climate change and the power they can hold over farmers. Regenerative growers face significant challenges in supply chains, such as inflexible contracts for meeting harvest deadlines and food safety regulations that put most of the risk and burdens on farmers. Supply chain actors eager to meet sustainability goals could provide incentives and financial support to farmers transitioning to regenerative farming systems.

⁵³ Wells, Betty, and Jean Eells. 2011. "One Size Does Not Fit All: Customizing conservation to a changing demographic." *Journal of Soil and Water Conservation* 66 (5): 136A-139A. <https://doi.org/10.2489/jswc.66.5.136A>. See also: Bittman, Mark, Melanie Saltzman, and Steve W. Thompson. "How women in Iowa are leading farmland conservation efforts." *PBS NewsHour Weekend*, March 7, 2020. <https://www.pbs.org/newshour/show/how-women-in-iowa-are-leading-farmland-conservation-efforts>.

Conclusion

Regenerative agriculture represents an opportunity to respond to the interacting global crises of climate change, pandemic, resulting recession, and entrenched economic inequality. This holistic approach to farming and land management can capture carbon at a cost far below mechanical sequestration, while delivering a host of co-benefits, from better air and water quality to lower risk in yield variability, food systems security, and community resiliency. Traditional practices like no-till farming, managed grazing, and reduced fertilizer use, if deployed in tandem and at scale, can address some of the most daunting challenges we face. Sustained and coordinated efforts from farmers, policymakers, investors, and researchers could have a significant positive impact on the effort to mitigate greenhouse gas emissions and become more resilient in the face of climate change. Ultimately, regenerative agriculture provides a powerful example of how problem solving that champions systems and stewardship can collectively address our environmental, social and economic challenges.

