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A Review of State Agricultural Conservation Programs

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About American Farmland Trust

American Farmland Trust (AFT) is the only national conservation organization dedicated to protecting farmland, promoting sound farming practices, and keeping farmers on the land. Founded in 1980, AFT's research and advocacy have led to major advancements in both federal and state policy.

About AFT's Farmland Information Center

The Farmland Information Center (FIC) is a project of American Farmland Trust that serves as a clearinghouse for information about farmland protection, serving people working to save farmland and ranchland for agriculture. It is a partnership with USDA Natural Resources Conservation Service. Visit www.farmlandinfo.org for more information.

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Background

Farms Under Threat is a multi-year initiative by American Farmland Trust (AFT) to document the status of and threats to U.S. farmland and ranchland while identifying policy solutions that ensure the protection and conservation of America's diverse agricultural landscape. Released in 2020, Farms Under Threat: The State of the States mapped agricultural land conversion and evaluated state policy responses in an Agricultural Land Protection Scorecard. The scorecard assessed six programs and policies that protect agricultural land, support agricultural viability, and help make land available for farmers and ranchers. AFT summarized results for each program in separate policy scoresheets and presented combined policy response scores in the scorecard.

During the second phase of policy research, we examined state programs that encourage agricultural conservation. Specifically, we focused on programs that expand the implementation of practices that improve soil health. Many of these practices also deliver other outcomes—reducing soil erosion, protecting water quality, enhancing wildlife habitat, reducing emissions, and sequestering carbon. We concentrated on programs that support soil health because they ensure available agricultural land remains productive and resilient in the face of a changing climate. These programs also advance the aims of farmland protection programs. Farmland protection and soil health programs ensure the nation has a supply of productive agricultural land to meet its needs.

The results of this research are published in the **State Conservation Program Dashboard** (the dashboard). The dashboard includes summary tables about three state approaches to advancing conservation practice implementation. The tables highlight program features and activities to enable comparisons across states. In this way, the dashboard provides a snapshot of state efforts to raise awareness about effective approaches, inform state and federal policy action, and encourage more agricultural land conservation.

Approach

We began this research by identifying the most common state program approaches that advance agricultural conservation, selecting program features to highlight, and collecting information through surveys, online research, and interviews. We reviewed policy inventories undertaken by national nonprofit organizations concerned with soil health to identify existing state programs. We also searched state agency websites, focusing on approaches implemented by state departments of agriculture and state conservation commissions, sometimes in partnership with local soil and water conservation districts (SWCDs)[1]. Based on this preliminary research, we identified three types of state-level programs: **On-Farm Conservation** programs offering technical and financial assistance to landowners to plan and implement practices, **Technical Assistance Capacity** programs

[1] Soil and water conservation districts are entities located in most counties that "work directly with landowners to conserve and promote healthy soils, water, forests and wildlife" by coordinating assistance from local, state, federal, and private sources. "About Districts - NACD," NACD - National Association of Conservation Districts, June 3, 2016, https://www.nacdnet.org/about-nacd/about-districts/.

that enhance the ability of technical assistance providers, including soil and water conservation district staff, university extension staff, and private contractors, to support landowners, and **Research and Demonstration** programs that test and share effective practices through peer-to-peer learning. Each of these state program approaches is detailed further below. These efforts complement federal Farm Bill conservation programs and have been adopted by at least five states. In addition, we profile more unique policies that encourage the adoption of conservation practices below.

When selecting programs for inclusion in the database, we chose programs that are authorized and funded by states, support agricultural conservation practices that benefit soil health, serve agricultural producers and organizations, and voluntarily incentivize practice implementation. We developed these guidelines in partnership with soil health experts, external advisors, and AFT staff.

1. **Authorized and Funded by State**: The program must be created by a state agency. Ideally, a program has an enabling statute passed by the state legislature that identifies a state agency to administer it. If a program relies on local entities, like SWCDs or counties, to help with administration, there must be some degree of state authority over program administration. The state should set general guidelines for participation, such as funding consistent practices and activities, setting cost-share thresholds, and providing application criteria.

   The program must also be primarily funded by the state. Some programs serve as a pass-through for federal funding only, without state investment. Common examples of these federal programs include the Section 319 Nonpoint Source Management Program, the Sustainable Agriculture Research and Education (SARE) program, the Conservation Stewardship Program (CSP), the Conservation Reserve Enhancement Program (CREP), and others administered by U.S. Environmental Protection Agency and U.S. Department of Agriculture.

2. **Supports Soil Health Practices**: We focused on programs that support conservation activities and practices that improve soil health.[2] We often included programs that have a different stated purpose, such as reducing soil erosion or protecting water quality, but support the same in-field conservation practices that benefit soil.[3] Soil health practices serve the biological functions of the soil ecosystem that, when managed properly, include benefits to water quality, water quantity, plants, and animals, and mitigate greenhouse gas emissions. Soil health is key to

[2] The United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS) defines soil health as, "the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans." NRCS promotes four principles of soil health: maximize the presence of living roots, minimize disturbance, maximize soil cover, and maximize biodiversity.

[3] Programs that focus on nutrient management, irrigation, and edge-of-field practices must also support soil health practices to be included in this dashboard. We found that nutrient management is interpreted differently by programs. Some programs that incentivize nutrient management focus on in-field practices aimed at improving soil quality by exercising more intentional application of nitrogen, phosphorus, and potassium, while others focus primarily on practices related to animal agriculture and reducing nutrient runoff to avoid, mitigate, or remediate agriculture's impact water quality and surrounding ecosystems.

reducing the impacts of agriculture on the climate, reversing some of those impacts, and making farms and ranches more resilient to extreme weather events.[4]

3. **Serves Agricultural Producers**: The program must be intended to predominantly serve agricultural producers and non-operating agricultural landowners rather than non-agricultural land.[5]

4. **Voluntary**: The program must provide incentives for producers to adopt conservation practices. Incentives can include free technical assistance, cost-sharing, or other financial assistance. Some programs are established to assist producers with bringing their operations into compliance with mandatory environmental regulations. These programs are included only if the state also provides complementary services to actively assist producers with reaching compliance. Programs that charge a fee for assistance beyond a cost-share match requirement are not included.

We chose 17 features among the three conservation program approaches, selecting qualitative criteria that can be consistently applied across programs. The process of identifying comparable program features was iterative. We refined the list of programs to document as we collected information. We provide additional information about each feature to further illustrate how the program is implemented. For example, for On-Farm Conservation programs, "Financial Assistance" is a program feature. We further describe this feature by cataloging practice payments, project caps, eligibility of equipment purchases, allowable match, and payment timing. A final step was to categorize this additional information to enable users to filter it using the State Conservation Program Dashboard. Throughout this process, we consulted with our project advisors, who offered expertise in on-farm conservation, soil health, and state and federal policy.

We researched program details by reviewing program-enabling statutes, regulations, and guidance documents on agency websites. We also surveyed program managers. Online surveys were sent in fall 2021. We followed up with interviews to fill in the information gaps and to address refinements to the program features highlighted in the dashboard. We invited state program managers to review the information summarized in the dashboard and incorporated their feedback.

State Program Approaches

On-Farm Conservation Programs

On-Farm Conservation programs help farmers and landowners implement land management practices that aim to enhance soil health and deliver other environmental benefits. We focused on programs that provide technical assistance, financial assistance, or a combination of both. Robust technical assistance that includes on-site visits, conservation planning, and implementation assistance is key to ensure successful implementation.

[4] Emily Bruner et al., "Combating Climate Change on US Cropland" (American Farmland Trust, February 5, 2021), https://farmlandinfo.org/publications/combating-climate-change-on-us-cropland/.
[5] Rangeland is agricultural land.

Financial assistance often takes the form of cost-share or grants to landowners that pay for all or part of the expense incurred to implement practices, often on a reimbursable basis. We did not evaluate loan programs due to low participation rates and limited effectiveness.[6] On-farm conservation programs complement federal Farm Bill conservation efforts, such as the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), the Regional Conservation Partnership Program (RCPP), and the Conservation Reserve Program (CRP).

Technical Assistance Capacity Programs

Technical Assistance Capacity programs help entities and professional conservation staff that support farmers and landowners implementing on-farm conservation practices. This approach aims to expand the network of technical assistance providers. These programs provide funding to expand operations and professional development opportunities for technical assistance providers. Capacity-building programs often benefit local soil and water conservation districts but can also support cooperative extension, nonprofit organizations, and independent private contractors.

Research and Demonstration Programs

Research and Demonstration programs fund on-farm research and peer-to-peer learning opportunities about conservation practices with the aim of expanding their adoption. Typically, entities, including academic institutions and nonprofit organizations, design research projects and serve as lead applicants. They collaborate with farmers or landowners to test land management approaches, collect data, demonstrate best practices, and share information with other producers. These programs may complement research projects funded by SARE grants administered by USDA's National Institute of Food and Agriculture.

Innovations

Beyond the approaches featured in this dashboard, states have used other, more unique methods to expand the adoption of on-farm conservation practices and improve soil health.

Cover Crop Premium Discount Programs

Cover crop premium discount programs in Iowa,[7] Illinois,[8] and Indiana[9] offer discounts on crop insurance premiums for every acre of cover crops enrolled with the intention of

[6] John Feldmann et al., "Innovative State-Led Financing Advances Agricultural Conservation" (Environmental Defense Fund, September 2019), https://www.edf.org/media/report-innovative-state-led-financing-advances-agricultural-conservation.
[7] "Cover Crop - Crop Insurance Project," Clean Water Iowa, https://www.cleanwateriowa.org/cropinsurancediscount.
[8] "Cover Crops Premium Discount Program," https://agr.illinois.gov/resources/landwater/cover-crops-premium-discount-program.html.
[9] ISDA, "Cover Crop Premium Discount Program," ISDA, January 14, 2021, https://www.in.gov/isda/divisions/soil-conservation/cover-crop-premium-discount-program/.

improving water quality, preventing erosion, and improving soil health and resiliency. To participate, the acres must be insured by an Approved Insurance Provider (AIP) that has elected to participate in the program. These cover crop premium discount programs are intended to supplement existing federal and state incentive programs such as EQIP, CSP, and state cost-share. This approach was first piloted in Iowa in 2018. Beyond minor variations, the cover crop premium discount programs are very similar among the three states.

Pennsylvania Resource Enhancement and Protection Program

Pennsylvania's Resource Enhancement and Protection (REAP)[10] allows farmers to earn state tax credits for implementing conservation best management practices, including making equipment purchases. The program was created in 2007 and amended in 2019 with the purpose of improving water quality. Eligible applicants receive 50% to 90% of project costs in the form of state tax credits. As of 2019, multi-species cover crops, cover crop roller/crimpers, and soil health testing, among other things, are all eligible for a 90% REAP tax credit. Both individuals and businesses are eligible to receive tax credits. Non-farm businesses can participate by sponsoring a farm to install practices or by purchasing transferable tax credits at a discount from eligible farmers. Agricultural operations are eligible for up to $250,000 of REAP tax credits in a seven-year period.

Minnesota Technical Training and Certification Program

Minnesota's Technical Training and Certification Program (TTCP)[11] offers no-cost education for technical assistance providers in the state. The state's Board of Water & Soil Resources (BWSR) administers the program in partnership with NRCS and local soil and water conservation districts. BWSR receives funding from the state's Clean Water Fund and federal sources to operate the program. BWSR investigates technical training needs around the state, develops the curriculum, handles course logistics, and coordinates with partners (such as staff from NRCS, U.S. Forest Service, Minnesota Department of Natural Resources, and more) to provide the training. Participation is open to anyone whose mission overlaps with the program, including NRCS field office staff and conservation district staff. Minnesota's Agricultural Water Quality Certification planners have been trained through this program. Although the program focuses on water quality and training is centered around NRCS technical standards and specifications, the curriculum is comprehensive.

Washington Soil Health Initiative

The Washington Soil Health Initiative (WaSHI)[12] is a partnership between the Washington State Department of Agriculture (WSDA), Washington State University (WSU), and the State Conservation Commission (SCC) to engage in research, outreach, and education and provide funding opportunities to promote healthy soil practices in the state. WaSHI is a collection of multiple efforts to advance soil health, including the Soil Health Roadmap, the

[10] "Resource Enhancement & Protection," Pennsylvania Department of Agriculture, https://www.agriculture.pa.gov:443/Plants_Land_Water/StateConservationCommission/REAP
[11] "Technical Training and Certification Program | MN Board of Water, Soil Resources," https://bwsr.state.mn.us/technical-training-and-certification-program.
[12] "Washington Soil Health Initiative," https://washingtonsoilhealthinitiative.com/.

Sustainable Farms and Fields Program (which is included in the dashboard as an On-Farm Conservation program), the State of the Soils Assessment, and more. In particular, the State of the Soils Assessment, led by WSDA and WSU, involves taking soil samples from around the state to establish a baseline, producing an interactive soil map[13], understanding how different climates, crops, and management practices impact soil health, and developing approaches for further soil health assessments and management tools. This project also trains over 100 technical assistance providers in soil health analysis and provides over 200 landowners with personal soil health reports.

Findings

The most successful programs have low barriers to entry and high levels of support for producers. States that are proactive about providing technical assistance, making it easy for producers to participate, are set up to make an impact. Programs that measure their impact using metrics grounded in conservation outcomes are in a position to be agile and strategic when using sometimes limited public funds.

1. Nearly every state supports agricultural conservation, but fewer advance soil health.

Forty-one states have at least one type of agricultural conservation program. We identified 79 unique programs in total; several states integrate multiple approaches in one comprehensive package. Just 28 of the agricultural conservation programs address soil health in their purpose statements.

The most common approach is On-Farm Conservation programs, with 37 states having created 61 programs that provide financial and/or technical assistance directly to producers to implement practices. A smaller number of states (11) administer 15 Technical Assistance Capacity programs to increase the operational capacity of technical assistance providers working with landowners in the state. These states are predominantly located in the Midwest and Mountain West. Seven states[14] have established nine Research and Demonstration programs, creating opportunities for peer-to-peer learning. Four states use all three approaches to support the adoption of conservation practices: California, Minnesota, Vermont, and Wisconsin. Further, Vermont's Agricultural Clean Water Initiative Program (known as Ag-CWIP) is the only program that uses all three approaches at the same time. Ag-CWIP offers larger grants to organizations that serve agricultural producers that can be used for a wide array of purposes, including providing direct technical assistance, hiring staff, and demonstrating innovative approaches to conservation.

In each approach to advancing conservation practices, we reviewed the purpose statement made in a program's enabling statute, if available, or in other guidance documents. Purpose statements can help indicate a program's priorities, such as promoting soil health, improving soil conservation (i.e., erosion and sediment management), or protecting water

[13] "State of the Soils Assessment," Washington Soil Health Initiative, https://washingtonsoilhealthinitiative.com/state-of-the-soils/.
[14] California, Maine, Minnesota, Utah, Vermont, Wisconsin, and Wyoming.

quality. The most common purpose among On-Farm Conservation programs was water quality, with 51 out of 61 programs (84%) mentioning it in their purpose statement. The next most common purpose was soil conservation, with 32 out of 61 programs (52%) focusing on it. In nearly all 32 programs, soil conservation is paired with water quality, creating a joint program purpose. Finally, 20 out of 61 On-Farm Conservation programs (33%) include soil health in their purpose statements. Programs may have more than one program purpose. In fact, nine out of 61 programs have soil health, soil conservation, *and* water quality in their purpose statements.

Soil conservation and water quality both appear in the purpose statements of 11 out of 15 Technical Assistance Capacity programs (73%), either alone or paired together. Only two out of the 15 Technical Assistance Capacity programs (13%) include soil health in their program purposes. In both cases, soil health is paired with soil conservation or water quality. Conversely, six out of nine Research and Demonstration programs (67%) include soil health in their purpose statements. At the same time, water quality is only present in three out of nine (33%) purpose statements, and soil conservation is present in two out of nine (22%).

2. Nearly all states with programs to support conservation practice adoption provide financial assistance and take steps to reduce financial barriers.

Thirty-three out of 37 states provide funds to pay for all or part of the cost of implementing practices. Implementation costs typically are based on receipts submitted for reimbursement but may also be based on standard payment rates developed by the state agency or NRCS. Notably, H2Ohio sets a higher payment rate than the cost of implementing practices to serve as a truer incentive. More than half of these programs (24 out of 47 programs) offer a maximum cost-share rate of 75% to 100%. Programs that work with local soil and water conservation districts sometimes allow the district to determine cost-share rates for practices implemented in that district, often with a state minimum threshold. In many cases, NRCS financial assistance, like EQIP, can be used as a source of matching funds. In addition, 13 programs offer flat, per-acre payments instead of expressing cost-share as a percentage.

Many On-Farm Conservation programs include provisions to reduce financial barriers for landowners. Nine programs offer at least partial payments upfront, so participants do not need to pay out-of-pocket to start implementation and wait to be reimbursed. In addition, 70% of programs that offer financial assistance allow participants to lease or purchase equipment—a significant difference from NRCS conservation programs. A third of these programs also provide funds to districts to acquire equipment that can be leased to producers. The programs that allow for equipment purchases tend to have more restrictions in place, such as those that require the equipment to be used for conservation or BMP purposes, those that have a dollar cap for equipment, or those that limit or prioritize the types of equipment that can be purchased. More than a third (17 out of 47) of cost-share programs do not require the producer or another program to provide a match. Out of the remaining 30 programs requiring match, 23 allow in-kind services as a source of match.

3. Virtually all states with On-Farm Conservation programs provide technical assistance to landowners; many of these states also work to build networks of technical assistance providers and foster peer-to-peer learning.

Thirty-five out of 37 states provide direct technical assistance. It takes the form of on-site consultations, development of conservation plans, and hands-on assistance implementing practices. These may be conducted by agency staff or partners, including conservation district staff, extension staff, or private technical assistance providers reimbursed by the state. Among the 61 On-Farm Conservation programs in 35 states, 80% offer on-site consultations to identify resource concerns. About 75% of On-Farm Conservation programs offer expert assistance or identify technical assistance providers to help implement practices. About 67% of the On-Farm Conservation programs offer conservation planning by agency staff or, often, in partnership with local soil and water conservation districts. Approximately half of all On-Farm Conservation programs provide a full suite of coordinated services: on-site consultations, conservation plans, and implementation assistance.

A relatively small subset of states offers complementary approaches to landowners. Nine of the 35 states that offer direct technical assistance also provide Technical Assistance Capacity grants: California, Colorado, Illinois, Indiana, Minnesota, Oregon, Texas, Vermont, and Wisconsin. This ensures there are strong networks of technical assistance providers available to assist landowners directly. Together, these states have invested over $82,000,000 in funding to cover operating expenses for technical assistance providers. A few states also provide professional development and training programs to certify new technical assistance providers. Refer to the Minnesota case study above to learn more. Five of the 35 states offering direct technical assistance also administer Research and Demonstration programs. By creating opportunities for peer-to-peer learning, these programs help landowners new to conservation practices overcome initial reservations or concerns.

4. Newly created soil health programs track soil health outcomes.

Programs in five states—California, Colorado, Maryland, New Mexico, and Washington—track soil health outcomes, such as soil organic matter, active carbon, and soil respiration.[15,16] Each program is relatively new and was created by legislators with the explicit purpose of improving soil health. Tracking soil health outcomes allows program administrators to demonstrate the benefits of incentivizing these practices, alter their strategy if benchmarks are not being met, and make a case for continuing public investment. It also enables producers to see and quantify the real-time impact conservation practices have on their soil quality. In the context of California's Healthy Soils Program, participants submit soil samples to program staff before and after practices are implemented to test for soil organic matter[17]. In Maryland, program staff use the Maryland

[15] Diane E. Stott, "Soil Health Technical Note No. 450-03: Recommended Soil Health Indicators and Associated Laboratory Procedures," Technical Note (USDA Natural Resources Conservation Service, November 2019), https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=44475.wba.
[16] We did not research these items in the context of Technical Assistance Capacity programs because these programs do not frequently interact with individual farms on which outcomes would be measured.
[17] "Soil Sampling Protocol for Soil Organic Matter Analysis" (California Department of Food and Agriculture Healthy Soils Program), https://www.cdfa.ca.gov/oefi/healthysoils/docs/HSP_SoilSampling.pdf.

Soil Health Card[18] to track active carbon and soil respiration. New Mexico's Healthy Soil Program requires chemical soil tests before a project begins and a physical in-field soil assessment before and after the project.

Many more programs track water quality outcomes. Overall, the most common type of conservation outcome measured was water quality, with 24 out of 61 On-Farm Conservation programs and 3 out of 9 Research and Demonstration programs tracking reductions in nitrogen, phosphorus, or sediment runoff. Programs in some states, like Maryland and Virginia, track water quality outcomes in part to demonstrate progress toward total maximum daily load (TMDL) goals as required by the U.S. Environmental Protection Agency.[19]

About 40% of On-Farm Conservation programs and more than half of Research and Demonstration programs do not currently track any conservation outcomes. Nearly all programs track program activities, such as acres enrolled, producers assisted, or practices implemented[20].

5. Most states have taken proactive steps to include producers of color in their agricultural conservation programs.

Twenty-eight states have program provisions to expand participation by producers of color. These include designating funding for producers of color, prioritizing applications submitted by producers of color, conducting in-person outreach, forming partnerships with entities that represent communities of color, collecting and aggregating demographic information in the application process, and establishing a diversity, equity, inclusion, and justice (DEIJ) committee.[21]

A significant proportion of On-Farm Conservation programs (75%) have taken some steps to increase participation among producers of color. In a smaller percentage of programs (33%), the state forms partnerships with entities that represent communities of color, including Historically Black Colleges and Universities (HBCUs), Native American Tribes, and other trusted entities and organizations, to help increase engagement with producers of color and assist with program implementation. In addition, about 25% of On-Farm Conservation programs conduct in-person outreach to producers of color, such as hosting or attending events, workshops, or field days to encourage participation by producers of color. Just 20% of programs prioritize producers of color by establishing favorable ranking criteria. Most of the programs that prioritize producers of color were created after 2010. Only California and Colorado have programs that set aside funding for producers of color.

[18] "Maryland Soil Health Card" (USDA Natural Resources Conservation Service Maryland, October 2018), https://mda.maryland.gov/resource_conservation/counties/SoilHealthCard.pdf.
[19] US EPA, "Tools to Track Progress in the Chesapeake Bay Watershed," Data and Tools, February 23, 2015, https://www.epa.gov/chesapeake-bay-tmdl/tools-track-progress-chesapeake-bay-watershed.
[20] In creating this database, we endeavored to collect information on the level of activity each program is experiencing in order to measure its effectiveness. However, the high degree of variability among state data collection methods prevented standardization.
[21] We did not research these all of these items in the context of Technical Assistance Capacity programs because these programs do not frequently interact with individual producers.

All nine Research and Demonstration programs include mechanisms to expand participation by producers of color. Most Research and Demonstration programs (78%) prioritize producers of color in application ranking. In addition, California earmarks 25% of available program funds for socially disadvantaged farmers and ranchers[22]. Approximately 44% of Research and Demonstration programs have established partnerships with entities that represent communities of color. In addition, about 22% of programs conduct in-person outreach to producers of color.

6. Programs funded by dedicated taxes or fees tend to invest more in conservation.

Nearly half of all programs (45%) reported at least one dedicated source of funding. Dedicated sources of funding include taxes on public water, motor fuel, oil and gas production, sales, meals and rooms, or fees from fertilizer and pesticide sales, conservation license plates, or cap and trade auction proceeds. On average, On-Farm Conservation programs that include dedicated taxes or fees alone or in combination with other funding sources (like appropriations and bonds) expend about $6,376,000 annually.[23] In contrast, programs that *exclusively* use appropriations average $4,275,000 in annual expenditures. Technical Assistance Capacity programs that include dedicated taxes or fees in combination with other funding sources expend, on average, about $19,897,000 annually, but programs that exclusively rely on appropriations average about $906,000 annually. Research and Demonstration programs funded by dedicated taxes or fees in combination with other sources expend an average of about $862,000 annually. Research and Demonstration programs that exclusively rely on appropriations average $254,000 annually.

For On-Farm Conservation programs, there appears to be a relationship between statutory authority and dedicated funding sources. Among the 46 On-Farm Conservation programs with explicit statutory authority, 52% are supported by dedicated taxes or fees. Just 27% of On-Farm Conservation programs *without* statutory authority have dedicated funding. However, this trend differs for Technical Assistance Capacity programs, where only one out of the seven programs (14%) with statutory authority have dedicated funding, and five of the nine programs (55%) *without* statutory authority are supported by dedicated funding. Further, most Research and Demonstration programs (8 out of 9) were created in statute, three of which receive funding from dedicated sources. The remaining program without statutory authority also receives dedicated funding. Finally, about half (53%) of the On-Farm Conservation programs that lack specific statutory authority rely exclusively on annual or bi-annual appropriations, meaning their funding must be renegotiated in each budget cycle, and the program is not guaranteed to continue operating due to changed state priorities and budget availability. Similarly, 44% of Technical Assistance Capacity programs without statutory authority solely receive appropriations.

[22] Gomez, "An Act to Amend Section 39713 of the Health and Safety Code, Relating to Greenhouse Gases.," Pub. L. No. AB 1550 (2016), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1550.
[23] Not all programs track average funds expended, or do not provide this information publicly.

Discussion

The United States has a long history of encouraging agricultural landowners to adopt land management practices that address environmental concerns through a combination of federal, state, and local actions. These efforts began in response to the Dust Bowl with the formation of the federal Soil Conservation Service (SCS), local soil and water conservation districts (SWCDs), conservation planning, and prescribed practices to address soil erosion and related resource concerns.[24] Congress authorized the Agricultural Conservation Program (ACP) in 1936, administered by the predecessor to the Farm Service Agency. Initially, the program focused on idling fragile agricultural land but, by 1945, provided cost-sharing for conservation practices.[25] Conservation planning and support for practice adoption by the SCS in partnership with local SWCDs continued throughout the 1950s and 1960s.

The focus of state programs has shifted over time to respond to current resource concerns. Iowa and Nebraska created the first state-level soil conservation cost-share programs in the 1970s, offering financial assistance for practices that address water quality and soil erosion. This coincided with Congress passing several important pieces of environmental legislation, including the National Environmental Policy Act in 1970 and the Federal Water Pollution Control Act Amendments of 1972, which would come to be known as the Clean Water Act.[26] In the 1980s, state lawmakers in the mid-Atlantic, Midwest, and along the Gulf Coast authorized eight new programs with a clear focus on water quality. This may have been a response to Clean Water Act revisions that required states to address nonpoint source water pollution.[27] At the same time, the SCS was working to establish new conservation requirements for highly erodible land. In addition, an increasing amount and proportion of financial assistance from ACP was being directed toward water quality practices on agricultural land. State agricultural conservation programs authorized throughout the 1990s and early 2000s continued to focus on addressing issues with soil erosion and water quality. Congress called for reorganization of the USDA in 1994 and renamed SCS as the Natural Resources Conservation Service (NRCS) to broaden the scope of the agency's mission. Shortly after, the 1996 Farm Bill authorized the Environmental Quality Incentives Program (EQIP), growing financial assistance for conservation practices exponentially from $130 million annually to nearly $2 billion per year by 2018.[28]

Newer state agricultural conservation programs center on soil health. Lawmakers in Vermont and New York first integrated soil health into the purpose statements of state-level programs as early as 2008. Among the 17 agricultural conservation programs authorized between 2010 and 2022, *all* address, and five focus solely on, soil health in their purpose statements. These programs may have coincided with NRCS' efforts to investigate

[24] "A Brief History of NRCS," https://www.nrcs.usda.gov/about/history/brief-history-nrcs.
[25] Ralph Heimlich, "Agricultural Resources and Environmental Indicators, 2003," accessed December 6, 2023, http://199.135.94.241/publications/pub-details/?pubid=41965.
[26] US EPA, "History of the Clean Water Act," Overviews and Factsheets, February 22, 2013, Great Lakes, https://www.epa.gov/laws-regulations/history-clean-water-act.
[27] US EPA, "319 Grant Program for States and Territories," Overviews and Factsheets, September 9, 2015, https://www.epa.gov/nps/319-grant-program-states-and-territories.
[28] "Regulatory Impact Analysis for the Environmental Quality Incentives Program (EQIP)" (Natural Resources Conservation Service, September 25, 2020), https://www.nrcs.usda.gov/sites/default/files/2023-03/Regulatory_Impact_Analysis_for_the_Environmental_Quality_Incentives_Program.pdf.

and promote soil quality and health, including publishing agency materials that describe soil health principles and recommending suites of practices to achieve them. By using a soil health framework, the new generation of agricultural conservation programs aim to proactively improve the soil's capacity to "…function as a vital living ecosystem that sustains plants, animals, and humans."[29] They focus on heading off future resource concerns rather than remedying prior harm.

New soil health programs also deliver climate benefits. We found that at least six of the 17 new soil health programs link soil health and climate benefits. Further, three out of the five programs that exclusively focus on soil health also mention climate in their purpose statements. A notable example is California's Healthy Soils Program. The purpose is to "…optimize climate benefits while supporting the economic viability of California agriculture by providing incentives—including but not limited to loans, grants, research, technical assistance, educational materials, and outreach—to farmers whose management practices contribute to healthy soils and result in net long-term on-farm greenhouse gas benefits." Among the six programs that connect soil health and climate benefits, four measure soil health outcomes, including soil's ability to sequester carbon and mitigate emissions, that can help meet climate goals over time. All NRCS-defined soil health practices are also categorized as climate-smart practices.[30] These activities deliver quantifiable greenhouse gas emissions reductions and increase carbon sequestration in soils. Soil health is also key to making farms and ranches more resilient in the face of a changing climate. Using a soil health framework offers a practical way for conservation professionals to engage agricultural landowners in climate-smart activities. Such an approach focuses on outcomes that are meaningful to their agricultural land and farm and ranch operations while providing public benefits.

[29] "Soil Health | Natural Resources Conservation Service," accessed December 6, 2023, https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health.
[30] "NRCS Climate-Smart Mitigation Activities" June 24, 2021, https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/climate/climate-smart-mitigation-activities.