



USDA/NRCS

Farmers Combat Climate Change Initiative



Climate change poses unprecedented challenges to U.S. agriculture because of the sensitivity of agricultural productivity and costs to changing climate conditions.

Our climate is changing. Few will feel the effects more directly than family farmers, ranchers, and landowners. Extreme weather will cause more frequent droughts and flooding, alter growing seasons, increase damaging pests, and disrupt the insects that pollinate crops. At a time when the global population is increasing—to an estimated nearly 10 billion by 2050—climate change threatens the world’s ability to grow food in a productive and environmentally sustainable way.

Farmers and ranchers are critical in the fight against climate change. Protecting farmland and limiting sprawling development can curb one of the largest sources of carbon emissions: transportation. In addition, farmers and ranchers manage more than one billion acres of U.S. land, which can mitigate climate change by absorbing vast amounts of carbon and locking it in the soil. Practices that sequester carbon and improve soil health—increasing soil productivity, resiliency, and versatility—are the next frontier of agricultural innovation.

However, the nation continues to convert three acres of irreplaceable agricultural land to development each minute, while losing nearly two billion tons of soil to erosion each year. This loss of agricultural capacity—in acres of land and inches of soil—is unsustainable and will contribute to the devastating impacts of climate change.

USDA REPORT



Farmland preservation, more than any other management activity, will likely have the single greatest impact in stabilizing and reducing future emissions.

DUKE UNIVERSITY REPORT

AFT's Climate Change Initiative

The solutions are relatively straightforward: protect the most productive, resilient U.S. farmland and improve its soil, which will benefit farmers, consumers, and the environment. We cannot afford to convert our best farmland to sprawling development while losing our productive soil. AFT's *Farmers Combating Climate Change* initiative has three strategies: reduce the conversion of agricultural land to development and promote smart growth; increase the use of climate-smart conservation cropping systems; and build support for policies that help agriculture mitigate and adapt to a changing climate.

1. Protect Farmland and Promote Smart Growth to Significantly Reduce Emissions

Evidence suggests that low density, sprawling development generates more emissions than compact urban development or agricultural land. Research in California and New York by American Farmland Trust (AFT) and University of California Davis found that urban areas emit 50 to 70 times more greenhouse gases per acre than farmland. Smart growth that involves compact development and farmland protection can reduce emissions from transportation and residential energy use.

Yet we continue to pave over our productive agriculture land. Over 42 million acres of U.S. farmland were converted to development between 1982 and 2012—three acres every minute. Even worse, we developed over five million acres of our agricultural land with the highest potential for food production—our most productive, resilient, and versatile land.

AFT's *Farms Under Threat* initiative is identifying and mapping the U.S. agricultural land with the highest potential for agricultural production and the greatest resilience to climate change. The *Farms Under Threat* mapping and analysis is evaluating threats, assessing policies, and projecting impacts out to 2040. AFT will use the results to work with state and local partners to directly protect and steer development away from this land. AFT also will expand our pioneering research to new states to make sure farmland protection and smart growth are key pillars in state climate plans.

In California, AFT research has shown that preventing the conversion of farmland to sprawling development can play an important role in curbing emissions. Regional planning that reduces car trips and urban sprawl (thereby protecting farmland) may have as much impact on slowing climate change as any other agricultural measure we can take. As a result, California allocated \$40 million for agricultural easements and set targets for reducing farmland conversion as integral parts of its strategy to minimize the state's greenhouse gas emissions. We need other states to do the same.



Siting Solar Energy

America needs to expand renewable energy development, much of which will occur on agricultural lands. But new solar panels and wind turbines should not be sited on our most productive and resilient farmland. AFT is pursuing "smart renewable siting" that guides solar development onto land where it has the least impact on agriculture and the environment. We can expand renewable energy generation and cut emissions while maintaining our most productive farmland and wildlife habitat.

Potential impact: AFT research found that reducing the conversion of California farmland to development 50 percent by 2030—and 75 percent by 2050—would save 700,000 acres of the most productive farmland while eliminating greenhouse gases equivalent to taking nearly two million cars off the road every year.

2. Improve Soil Health to Reverse Climate Change and Improve Productivity

Farmers and ranchers manage nearly 60 percent of the land in America—land that can act as a natural carbon “sink” by absorbing vast amounts of carbon dioxide from the atmosphere and storing it in plants and soil. Carbon farming—also called climate-smart agriculture, regenerative farming or conservation cropping systems—improves soil health, sequesters carbon, and increases resiliency. Healthy soils absorb more water during heavy rains, which reduces runoff, and offer better resilience during periods of drought because the land holds more water. Healthy soils also can help farmers increase yields and be more productive in the long-term.

However, much of the nation’s soil has degraded over time, losing more than half of its original organic carbon content—resulting in erosion, soil nutrient losses, increased greenhouse gas emissions, and reduced productivity. We must reverse this trend.

Farm conservation practices are among the least costly and most immediate actions that can help reduce emissions on a meaningful scale. Their extensive adoption can serve as an important bridge until new climate-friendly energy and transportation technologies are developed. A growing number of innovative farmers and ranchers are taking action to rebuild their soil health. But barriers hinder more widespread adoption, including real and perceived economic risk, difficulties in persuading the landowners who rent land to share those risks, and insufficient technical assistance. To address the barriers, AFT will test new tools that quantify the potential of soil health improvements, conduct research to better understand non-operating landowners who rent their land, and expand training in improving soil health.

Potential impact: The Nature Conservancy research estimates that if

farmers operating 50 percent of Midwest farmland adopted conservation cropping systems by 2025, that would mitigate 25 million metric tons of greenhouse gases annually and provide \$7 billion in environmental and societal benefits.



USDA/LANCE CHEUNG



USDA/CYNTHIA MENDOZA

The nation that destroys its soil destroys itself.

PRESIDENT FRANKLIN D. ROOSEVELT



USDA NRCS/RON NICHOLS

What Is Carbon Farming?

“Carbon farming” involves land management practices that make soil healthier by increasing its organic matter. It leverages the power of photosynthesis to take carbon dioxide out of the air and sequester or store it in the soil, which helps mitigate climate change. This systems approach can include reducing the amount of tilling or plowing, planting cover crops, managing fertilizer use, rotating crops, and expanding perennial crops. Healthier, active soil also boosts productivity and enhances resilience to floods and droughts.

Landowners: The Key to Improving Soil Health

More than one-third of all farmland in America is rented, but in some parts of the country that figure is as high as 70 percent. Yet we know very little about non-operating landowners—the millions of Americans who own and lease agricultural land. Both landowners and the farmers who rent their land want to employ more conservation practices, but barriers include short-term nature of many leases; lack of engagement in conservation decisions; insufficient soil health metrics; and an inability to share the cost or risk of investments. To address this, AFT is conducting a national survey of non-operating landowners to better understand their values and needs; 2) scaling up an innovative approach to engage landowners, especially the growing number of women landowners; and 3) testing new types of leases.



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3. Build Support Among Farmers to Advance Policies

Agriculture, a land and weather-based industry, will be affected by changes in climate in crucial ways. However, the debate over climate change has caused some in the agriculture community to remain skeptical. Large-scale transformation will occur only when farmers, ranchers and landowners see it in their economic interests to adopt conservation practices. The recent focus on improving soil health and improving productivity has created an opportunity. We need policies that reward regenerating soil health. But farmers need first-hand experience with practices and tools that work successfully in their fields before advocating for policy change. AFT is communicating the successes of farmers already using resilient practices to build support for policies that promote investments in soil health—amplifying the voice of agriculture in support of combatting climate change and improving resiliency.

American Farmland Trust's Role

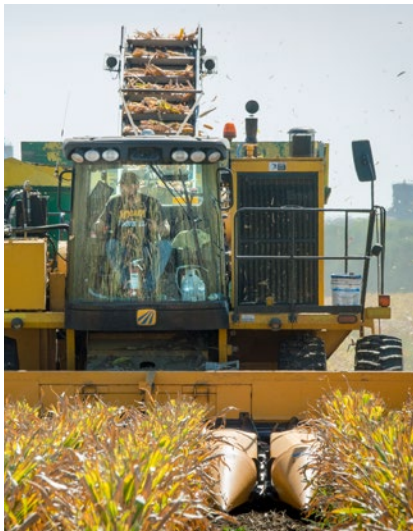
AFT's mission is to save the land that sustains us by protecting farmland, promoting environmentally sound farming practices, and keeping farmers on the land. Conserving farmland by the acre and soil by the inch is a powerful strategy for reducing greenhouse gases and improving productivity. With pioneering research, innovative tools, and aggressive advocacy, AFT is helping farmers, ranchers, and landowners play a unique role in reducing the growing threat of climate change while increasing food production and improving soil health.

Contact Us

To learn more about AFT's Climate Change initiative, visit www.farmland.org/climate or contact **Jimmy Daukas** at jdaukas@farmland.org; 202-378-1242.



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