



# CLIMATE-SMART AGRICULTURE AND FORESTRY

The global climate affects everyone and everything on the planet. As the climate changes, significant impacts will be felt by all Americans, including farmers, ranchers, private forest landowners, and their surrounding communities. Producers and land managers are experiencing these impacts firsthand on their operations through shifting weather patterns and increasingly frequent and severe storms, floods, drought, and wildfire.

Farmers, ranchers and forest landowners have an important role to play in the nation's climate solutions, regardless of the size, location, or type of their operation. Climate-smart agriculture and forestry is an integrated approach that enables farmers, ranchers, and forest landowners to respond to climate change by reducing or removing greenhouse gas emissions (mitigation) and adapting and building resilience (adaptation), while sustainably increasing agricultural productivity and incomes. With support from NRCS, producers and land managers can engage in climate-smart agriculture and forestry to adapt to the impacts of climate change and contribute to solutions that help to limit future climate change.

USDA's Natural Resources Conservation Service (NRCS) offers a variety of programs, services, resources and tools to help farmers, ranchers, forest landowners and partners pursue voluntary conservation efforts that result in climate solutions. One-on-one technical and financial assistance through voluntary conservation programs directly support climate-smart agriculture and forestry, including:

- [Conservation Technical Assistance \(CTA\)](#)
- [Environmental Quality Incentives Program \(EQIP\)](#)
- [Conservation Stewardship Program \(CSP\)](#)
- [Agricultural Conservation Easement Program \(ACEP\)](#)
- [Regional Conservation Partnership Program \(RCP\)](#)

Additional opportunities to support climate-smart agriculture and forestry may also be available via partners through the [Partnerships for Climate-Smart Commodities](#) opportunity.



## Mitigation

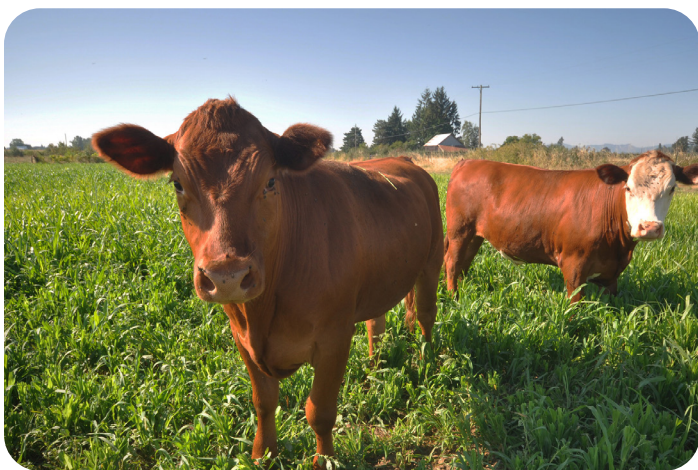
### *Reducing or removing greenhouse gas (GHG) emissions that cause climate change*

Voluntary conservation activities can support climate change mitigation by reducing greenhouse gas emissions or increasing carbon sequestration. Many can also help operations build climate change resilience while addressing other natural resource concerns such as soil health, water quality, pollinator and wildlife habitat and air quality. See the full list of practices in the [Climate-Smart Agriculture and Forestry Mitigation Activity List](#), including practices available through EQIP and enhancements available through CSP.

The [Inflation Reduction Act](#) provides additional funds to support climate change mitigation through conservation programs.

### **NRCS climate-smart agriculture and forestry mitigation activities can support mitigation in the following areas:**

- **Soil Health** – Reducing emissions and enhancing soil carbon sequestration.
- **Improved Nitrogen Management** – Implementing SMART nutrient management helps reduce nitrous oxide, a potent greenhouse gas. SMART Nutrient Management includes the 4Rs of nutrient stewardship – the right Source, right Method, right Rate, and right Timing – and emphasizes smart activities to reduce nutrient loss by Assessment of comprehensive, site-specific conditions.
- **Improved Livestock Waste Management Systems** – Reducing potent methane emissions from manure.



- **Enhanced Grazing Land Management** – Reducing emissions and building soil carbon stocks in grazing systems.
- **Improved Agroforestry, Forestry and Upland Wildlife Habitat** – Building carbon stocks in perennial biomass and soils.
- **Restored Disturbed Lands** – Improving the quality of previously mined or degraded lands to increase soil and perennial biomass carbon stocks.
- **Energy, Combustion and Electricity Efficiency** – Reducing emissions from agricultural operations and infrastructure through energy and fuel efficiency and system and operational improvements.
- **Precisely Managed Water on Rice Fields** – Reducing methane emissions from rice fields by minimizing methane production during the growing season.

## Adaptation

### *Adapting and building resilience to climate change and its impacts*

Climate change poses environmental, social, and agricultural challenges that require adaptation measures to help adjust to new or changing climatic patterns. Adaptation actions can be taken in response to local climate change impacts and projections to reduce risks and vulnerabilities, build resilience and help to maintain productivity.

Adaptation actions in agriculture may include changing or adjusting various management practices and inputs, including nutrient inputs, tillage practices, crop species, crop rotations, harvest strategies, livestock management, irrigation, and uses of natural resources like water and vegetation.

Adaptation may also include integrating conservation practices that can help build resilience to climate change impacts over time. For example, improving or maintaining soil health may help buffer the effects of extreme weather, such as excessive precipitation and drought.

NRCS can support producers who want to voluntarily implement climate-smart conservation activities to help adapt their operations and build resilience, while maintaining productivity and conserving and restoring the natural resources on their lands.

Many conservation activities that help adapt agricultural operations to these changing conditions can also support climate change mitigation. Using cover crops, for example, increases soil cover and organic matter which can reduce water loss to lessen potential drought stress and decrease erosion associated with extreme weather. At the same time, cover crops can increase carbon sequestration in soils, providing climate change mitigation benefits as well. Similarly, establishing tree cover or silvopasture systems can provide shade for livestock to reduce heat stress, while also sequestering carbon in tree biomass.

Urban agriculture and innovative production may also help communities and producers respond to climate change, including by supporting local, resilient food systems.

## NRCS Can Help

Producers and landowners should contact the NRCS office at their local USDA Service Center for additional information and one-on-one technical support specific to their natural resource objectives. [USDA Service Centers](#) are in nearly every county across the United States.

If you're new to working with NRCS, see this [Guide to USDA Resources](#) and the Conservation at Work Video Series at [farmers.gov/conservation/conservation-at-work](https://farmers.gov/conservation/conservation-at-work) that shows examples of conservation practices that may work well for your operation, including options that contribute to climate change mitigation and adaptation.

For additional information, visit [farmers.gov/climate-smart](https://farmers.gov/climate-smart) to learn how each NRCS program supports climate-smart agriculture and forestry. In addition, state-specific application ranking dates for NRCS programs are available on the NRCS Program Application Ranking Dates webpage at [nrcs.usda.gov/ranking-dates](https://nrcs.usda.gov/ranking-dates).