

Harnessing the IRA to Support Western Agricultural Landscapes



NRCS and its partners are helping farmers, ranchers, and forest landowners in the Nation's most arid landscapes of the West respond to conservation challenges caused by two major threats to water supply: increasing demand for water and climate change impacts.

Increasing demand by all users for a limited supply of water is stressing many communities across the West. Impacts of a changing climate, especially the increasing frequency and intensity of drought, are already being experienced and are projected to worsen.

The Inflation Reduction Act (IRA) has provided additional funding for the Natural Resources Conservation Service (NRCS) to implement Climate-Smart Mitigation Activities through several programs and strategies that address the changing climate and build resiliency.

The Inflation Reduction Act (IRA)

IRA represents the single largest investment in climate and clean energy solutions in American history. It provided an additional \$19.5 billion over five years for climate-smart agriculture through NRCS conservation programs.

Climate-Smart Mitigation Activities

Funding through the IRA will help farmers, ranchers, and forest owners implement new or additional conservation activities on their lands, with a focus on [Climate-Smart Mitigation Activities](#). These activities may increase carbon storage in soil and plant communities or avoid, capture, or reduce greenhouse gas emissions. They may also help address drought and other climate change-related stressors.

Agricultural producers play a critical role in fostering a healthy environment by incorporating conservation activities into a planned system that provides multiple benefits for addressing natural resource concerns, responding to climate change, and sustaining agricultural productivity.

For example, adding perennial crops to a rotation on 100 acres of land in Baca County, Colorado may increase soil carbon inputs from higher levels of plant residue and remove around 25 metric tons of CO₂ from the atmosphere, or the equivalent of removing five gasoline-powered cars off the road for a whole year. Similarly, intensively managed grazing on 100 acres of rangeland may increase soil carbon and reduce soil nitrous oxide emissions by three tons of CO₂ equivalent per year, the equivalent of reducing the emissions generated from driving an average gasoline-powered car for around 7,000 miles.

Climate-Smart Mitigation Activities can lead to direct, quantifiable climate change mitigation benefits, including increased carbon sequestration, reduced greenhouse gas emissions, or both. Additional practices may be needed to facilitate the management or function of Climate-Smart Mitigation Activities to achieve the mitigation benefits. These facilitating practices may not have quantifiable mitigation benefits themselves, but they are an essential part of the system and provide other co-benefits.

Climate-Smart Agriculture and Forestry

Climate-smart agriculture and forestry (CSAF) is an integrated approach that enables farmers, ranchers, and forest landowners to respond to climate change by reducing or removing GHG emissions (mitigation) and adapting and building resilience (adaptation), while sustainably increasing agricultural productivity and incomes.

Conservation Systems Provide Multiple Benefits

Using conservation practices on Western agricultural lands as a part of a planned system to achieve multiple desired benefits may require a combination of several conservation practices, including Climate-Smart Mitigation Activities and facilitating practices. These systems may also provide climate change adaptation benefits such as building healthier soils to buffer fields against volatile weather,

conserving water to improve drought resilience across the farm or ranch, and reducing water losses from canals, reservoirs, and other irrigation water infrastructure to build resilience across the agricultural landscape.

On Crop Fields, Pastures, and Urban Farms

Crop fields and pastures managed according to soil health management principles are a good place to start applying Climate-Smart Mitigation Activities. In general, conservation cropping systems help improve soil moisture and irrigation water use efficiencies, build resiliency to agricultural drought, and may also reduce greenhouse gas emissions. Systems with high residues returned to the soil and those with little or no tillage (disturbance) are most beneficial to increasing soil carbon storage.

A typical dryland cropping system in the West may include several conservation practices such as Conservation Crop Rotation (328), Cover Crop (340), Residue and Tillage Management, No-Till (329), and Nutrient Management (590), while irrigated crops and pastures would also need Irrigation Water Management (449). Where applicable, Soil Carbon Amendment (336) may be used to improve soil conditions in these systems. Depending on the type of urban farming system, combinations of these practices may also be used in community gardens, rooftop farms, hydroponic, aeroponic, and aquaponic facilities, and vertical production.

Irrigated agriculture is supported by water delivery systems which supply water from ground or surface water sources. Irrigation systems may present additional opportunities to reduce greenhouse gas emissions through energy, combustion, and electricity efficiency practices where systems rely on a fossil fuel-based energy source. Typical practices or enhancements for providing energy saving and climate change mitigation

benefits in irrigated agriculture may include switching to renewable power sources through the Combustion System Improvement Practice (372), Irrigation Pipelines (430), Micro-irrigation systems (441), Sprinkler System (442), and variable frequency drives under the Pumping Plant Practice (533).

On Rangelands

Rangeland, including prairies and other grasslands, sagebrush and other shrublands, deserts and other arid lands, are managed as natural ecosystems that support wildlife and the grasses, forbs, and shrubs in these lands are typically suitable for grazing or browsing. A planned conservation system of practices including Climate-Smart Mitigation Activities can also be used to protect and improve the condition and resilience of these important landscapes.

Typical conservation systems may include climate-smart activities like Brush Management (314) to remove woody invasives and improve wildlife habitat, Herbaceous Weed Treatment (315) to release desired plant communities, Prescribed Burning (338) to create patches for grazing or wildlife habitat, Range Planting (550), Riparian Herbaceous Cover (390), and facilitating practices like Upland Wildlife Habitat Management (645), or Agricultural Conservation Easement activities. When livestock are used to manage rangelands, grazing practices are also included such as climate-smart Prescribed Grazing (528) and facilitating Stream Crossing (578) and Fence (382) practices.

In Forests

Forested ecosystems present many opportunities to add Climate-Smart Mitigation Activities to conservation systems designed to provide multiple benefits. For example, Tree and Shrub Establishment (612) is a typical practice used to increase carbon storage both above and below ground.

Forest Stand Improvement (666) can be used to increase on-site carbon storage, improve forest soil quality, enhance understory vegetation, reduce wildfire risk, increase mast production, regenerate oak forests, reduce stand density to create open structure, create structural diversity with patch openings, rehabilitate degraded hardwood stands, create summer roosting habitat for bats, maintain forest songbird habitat, establish, or regenerate longleaf pine. Fuel break (383) to reduce risk of catastrophic fire, Woody Residue Treatment (384) to produce biochar, and Restoration of Rare or Declining Natural Communities (643) used to restore floodplain connectivity may also provide climate change mitigation benefits. Alley Cropping (311), Forest Farming (379), Windbreaks/Shelterbelt (380), Silvopasture (381), and Riparian Forest Buffer (391) are typical agroforestry practices which provide climate change mitigation benefits.

Boosting Our Work Through the Inflation Reduction Act

The IRA provides unprecedented funding to support climate change mitigation through several of the existing programs that NRCS implements including the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), the Agricultural Conservation Easement Program (ACEP), and the Regional Conservation Partnership Program (RCPP). Activities supported by the IRA for their mitigation benefits can be implemented in systems that provide multiple benefits, including building climate resilience and addressing other resource concerns, such as water quantity, to advance both climate change mitigation and Western water priorities.

Be part of the solution by contacting your local office using the [USDA Service Center Locator](#).