Conservation Innovation Grants
CIG

CIG: Innovation Today for Tomorrow's Agriculture

USDA's Natural Resource Conservation Service awarded the first Conservation Innovation Grants in 2004. Since then, CIG awardees have worked with NRCS, farmers, ranchers and forest landowners to develop the next generation of conservation approaches and technologies.

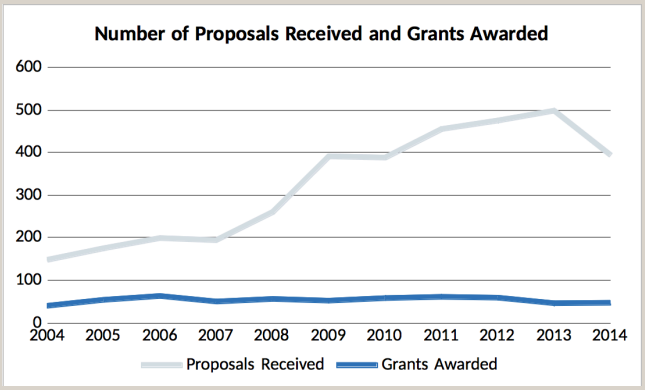
Conservation Innovation Grants (CIG) were first authorized as a part of the Environmental Quality Incentives Program (EQIP) by the 2002 Farm Bill. The program's purpose is to stimulate the development and adoption of innovative conservation approaches and technologies in conjunction with agricultural production, effectively providing a bridge between research and widespread application on agricultural operations.

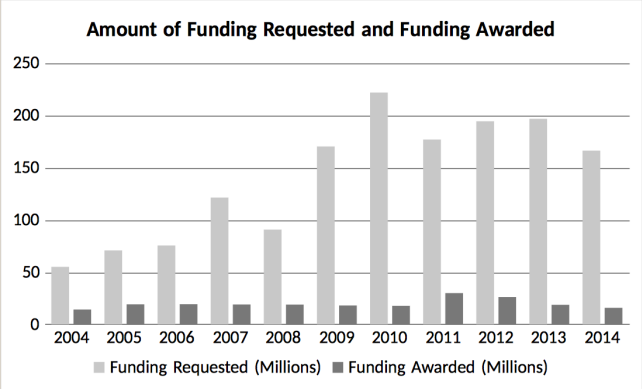
Nongovernmental organizations, state and local governments, Tribes, and individuals are all eligible for CIG awards. All CIG projects must involve EQIP-eligible producers.

From 2004-2014, approximately $216 million has been awarded for 586 national projects. The number of grants awarded annually has stayed relatively level, while the number of proposals received has increased substantially since the early years of the program.

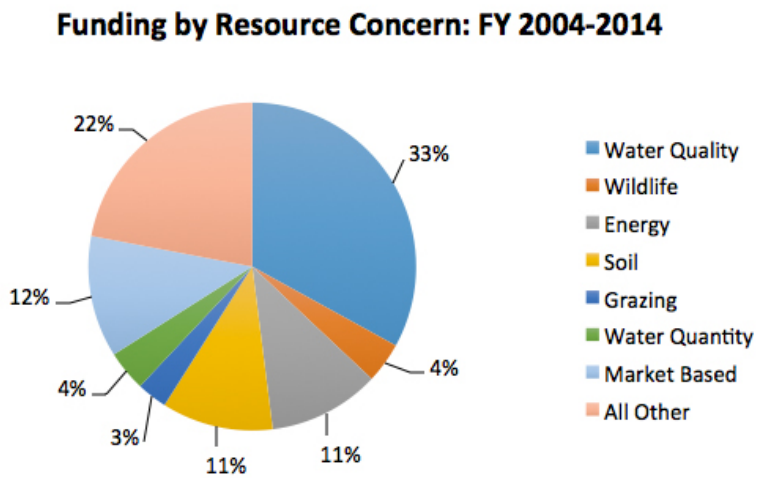
Each CIG award must be matched with at least an equal amount of funding, more than doubling NRCS's investment in conservation innovation. NRCS evaluates findings from CIG projects for incorporation into conservation practice standards, technical notes, trainings, and programs.

In the ten years that NRCS has administered the program, CIG projects have addressed a diversity of natural resource concerns, such as helping develop and demonstrate more efficient ways to manage nutrients, reduce on-farm energy use, increase irrigation efficiency, and accelerate development of water quality trading and greenhouse gas markets. Below are several examples of the impact that CIG projects have had on advancing technologies and approaches to natural resource conservation.





NRCS staff evaluates ways farmers can reduce greenhouse gas emissions and store carbon on their lands. NRCS photo by Kari Cohen.



Development of innovative approaches and technologies for water quality improvements has been the predominant resource concern for CIG projects

Innovation Successes

1. Solar Irrigation Pumps

Water quantity is a significant issue in many parts of the country, particularly in the arid Southwest. Many producers on the Navajo Nation work their land beyond the reach of the energy grid, so they must choose from diesel-generated power or renewable energy options for irrigation. Tó Łání Enterprises (TLE) received a 2012 CIG award to conduct a three-year national pilot project to demonstrate the environmental, agricultural, economic and sociocultural effectiveness and benefits of solar energy systems for pumping irrigation water.

The project was designed to encourage and facilitate adoption of such systems among Navajo, Hopi and other tribal conservation districts, farmers and ranchers in the arid and semiarid Southwest. Although demonstration sites were only recently completed (August 2013), results have been so promising that the solar powered system has already been adopted by many Navajo farmers.

2. A First-of-its-Kind Carbon Markets Transaction

Environmental markets have the potential to generate new revenue streams for agricultural producers while enhancing natural resource conservation. Ducks Unlimited used a 2011 CIG award to develop a protocol for measuring and quantifying the amount of carbon stored by avoiding the conversion of grasslands to cropland. This protocol was then approved by the American Carbon Registry and used by private landowners to generate carbon credits on ranch lands in North Dakota.

In 2014, General Motors became the first entity to purchase these credits as part of its corporate sustainability initiative. This success is being used as a model for future environmental markets to enhance conservation of our natural resources.

3. Temperature Credit Trading for Salmon Habitat

Using a 2011 CIG award, The Freshwater Trust worked with the Willamette Partnership and a number of other organizations, agencies and regulators to develop the standards, calculation methodologies, verification and validation procedures, and state policies necessary to allow for trading ecosystem service credits for water temperature in Oregon.

Through the project, the city of Medford, Oregon worked with farmers, ranchers and other private landowners to shade the Rogue River in order to meet its regulatory compliance requirements for salmon habitat under a Total Maximum Daily Load. Incentivizing landowners to take action on a voluntary basis cost approximately half of what it would have cost to build and operate chillers to cool the effluent from Medford's wastewater treatment plant. President Obama, in remarks at a White House Summit on Conservation, highlighted this project as an example of a progressive, forward thinking conservation effort. It was the

First irrigation water pumped from a solar source. Photo by NRCS.

first time a standing President addressed the issue of emerging markets for ecosystem services.

4. Developing an Air Quality Tool for Livestock Operations

For several years, NRCS has supported efforts by a consortium of universities working to develop a National Air Quality Site Assessment Tool (NAQSAT) for livestock and poultry operations. The first CIG funding this effort was awarded in 2007. After many years of development, refinement and testing, the NAQSAT will soon be accepted as NRCS' official Air Quality Site Assessment Tool. The present online version can be found at http://naqsat.tamu.edu.

5. Generating Greenhouse Gas Credits Through Nutrient Management on Cropland

In 2011, NRCS awarded a CIG grant to the Delta Institute to develop a protocol that would allow farmers to generate greenhouse gas reduction credits arising from voluntary implementation of more efficient nitrogen fertilizer management techniques. The Delta Institute engaged a variety of partners in the project, including American Farmland Trust, Conservation Technology Information Center, Environmental Defense Fund and agricultural retailers. The end result was a methodology approved by the American Carbon Registry that allows for the generation of carbon credits (converted nitrogen oxide credits) on cropland. In a first-of-its-kind transaction, the Climate Trust purchased credits developed using the methodology in early 2014, providing a new income stream for those farmers generating the credits. This demonstrates how improving nitrogen management can be used to generate marketable credits that improve the environment and provide additional income for producers.

6. Rebuilding Pollinator Habitat

People depend on pollinators for about 30 percent of their food supply; however, habitat for pollinators has declined in recent years. A 2009 CIG award to the Xerces Society developed new NRCS guidelines for improving native bee habitat. The project demonstrated that establishing native pollinator habitat in previously abandoned agricultural areas significantly increased native bee populations. The project was carried out in California where much of the nation's fruit and vegetable crops are grown. The guidelines developed led to publication of an NRCS bee habitat improvement reference guide. NRCS is now providing funding to establish bee habitat on previously unused farm areas on hundreds of thousands of acres across the nation.

A Missouri Coteau wetland near Bismarck, N.D., in the heart of the Prairie Pothole Region. Credit: Ducks Unlimited.

Long-Tailed Skipper Butterfly on a flower.

7. Saving Water with Online Irrigation Technology

Growers using traditional cranberry irrigation systems have to turn their systems on and off manually; wasting time, money and water. With support from a CIG award, the Cape Cod Cranberry Growers Association worked with growers to install automated sprinkler systems that conserve water and reduce costs. These systems have sensors among the cranberry vines that monitor temperature and other weather conditions. A grower can monitor and control the systems online. Growers using these systems can save more than 9,000 gallons of water per acre on a frost night. During the study period, the systems reduced water application times by two hours per application. For a typical growing

season, 280,000 gallons of water per acre can be conserved by using this system.

8. A Tool for Tailoring Cover Crops for Water Quality and Weather Resilience

Cover crops can dramatically reduce nutrient losses to surface and ground water, provide nutrients for the next crop and enhance water infiltration, all of which improve resilience to extreme weather. Through a CIG award and other contributions, the Midwest Cover Crops Council developed a Cover Crop Decision Tool that incorporated expert knowledge across several states into a decision support system for farmers. As a result of this project, producers throughout the Midwest United States can evaluate their options and receive cover crop recommendations, such as species and seeding rates, tailored to their local conditions, soils and management goals. This not only helps farmers be profitable, but also contributes public value through benefits to the environment.

9. Taking Adaptive Nutrient Management To the Next Level

Nutrients are essential for food production, but loss of excess nutrients can degrade water quality. With support from a CIG award, the Iowa Soybean Association, in partnership with the Environmental Defense Fund, worked directly with producers to evaluate an adaptive nutrient management process for refining nutrient management on their farms. Results from this project showed that 80 percent of farmers participating changed their nutrient management practices within two years. The greater nutrient use efficiency made possible through adaptive nutrient management not only allowed producers to reduce their fertilizer inputs and associated costs, but also reduced the risk of nutrient loss to the environment. These results led NRCS to include adaptive nutrient management in its revised Conservation Practice Standard 590, Nutrient Management. NRCS then developed and provided guidelines and training to field staff on implementing adaptive nutrient management and is currently providing financial and technical support to increase adoption of this practice nationwide.

10. A Cloud-based Tool for Nitrogen Management

Nitrogen is required for plant growth, but loss of excess nitrogen can contribute to water quality impairments and greenhouse gas emissions. Determining the right rate to apply is difficult, because weather influences how much nitrogen is needed. With funding from a CIG and others, Cornell University developed and tested a publicly available, cloud-based nitrogen recommendation tool, Adapt-N, on farms over three years. The tool models local weather, soil and management to provide better nitrogen recommendations. Results showed that Adapt-N saved producers $30 an acre and decreased nitrogen inputs by 44 pounds an acre, without decreasing yield. The model has been successfully tested throughout the Northeast United States and is now being evaluated in the Midwest.

2015 and Beyond

The Conservation Innovation Grants Program will continue to drive innovation in natural resource conservation in conjunction with agricultural production, yielding benefits for farmers, ranchers, forest landowners, and the American public.

For more information, visit: http://www.nrcs.usda.gov

Helping People Help the Land

USDA is an equal opportunity employer, provider, and lender.