

Conservation Innovation Grants- Awardees: Fiscal 2012

Below is a list of the fiscal 2012 Conservation Innovation Grants (CIG) awardees. The information includes the project location, the amount of funding, the project title and a brief description.

Multi-State Projects

American Society of Agronomy (US) \$20,000

Assessment of Conservation Innovation Grants (CIG) Nutrient Management Projects and Recommendations for Future Adoption and Incorporation into Practice Standards

The project goal is to evaluate 36 projects, resulting in recommendations and practice standards to be incorporated in NRCS policy.

Illinois River Watershed Partnership (OK, AR) \$132,823

Improving Dissolved Phosphorous (P) in Runoff with Water Quality Improvement Structures

This project proposes to construct a phosphorus removal structure on a poultry farm located in the Illinois River watershed, which will be strategically placed to intercept runoff occurring immediately around a poultry production house. Awardee will also monitor the effectiveness of the structure by sampling inflow and treated water through the use of automatic samplers and flow meters, tracking the reduction of phosphorous load. The goal is to remove 50 percent of the phosphorous load.

Kansas State University (KS, MO) \$221,282

Development and Adoption of No-till and Minimum Tillage Vegetable Production Systems in the Midwest

This project proposes to demonstrate the effectiveness of no-till production systems for pumpkin, sweet corn and snap bean through a series of demonstration sites at university and NRCS locations. The project will provide vegetable growers with "hands-on" experience growing no-till crops by initiating a mini-grant incentive program for vegetable growers to conduct demonstration trials in Kansas and Missouri. It will also assess the impact of different cover crop species and no-till systems on soil health, yield and profitability of pumpkin, sweet corn, and snap bean. The project will engage growers and others in university/extension with current knowledge of minimum tillage systems and disseminate the results of this project through established and novel extension networks and outlets.

National Association of State Conservation Agencies (US) \$79,000

Developing National Assessment Standards for Agricultural Certainty to Operate

This project proposes to develop a comprehensive boilerplate template that will aid states in developing agricultural certainty programs. The template will be derived from the best features of existing certainty programs as well as improvements suggested by a wide array of stakeholder groups. The project will provide training sessions to state agencies that will include an overview of existing programs, steps to take in developing a certainty program, and how to use the template.

National Fish and Wildlife Foundation (GU, AS, MP, PR, VI, HI, FL) \$230,000

Creating a Toolkit for Assessment and Mitigation of Agricultural Operations to Benefit Coral Reefs

This project seeks to fill two critical gaps in understanding that prevent managers from prioritizing and evaluating the success of Environmental Quality Incentives Program investments to coral reefs in real time. The first gap is providing a standardized methodology toolkit across island jurisdictions to evaluate the source of sediments and nutrients that are impacting reefs downstream and the relative inputs coming from agricultural operations to other land-based sources of pollution. The second gap is using newly available technologies in genetic markers in corals to test the impact of reducing stressors from agricultural operations to coral reefs in real time.

NatureServe (MN, WI, IA, IL) \$68,000

NatureServe and NRCS Regional Collaboration: Data and Technology Transfer to Enhance and Support Ecological Site Habitat and Wildlife Management

The goals of this project are to increase ecological and wildlife knowledge and data accessibility on a local and regional basis to support, enhance and accelerate the development of Ecological Site Descriptions (ESDs). The project will also enhance Wildlife Interpretation sections of ESDs by linking classification information to wildlife species of concern.

North Carolina State University (AR, FL, GA, KY, MS, NC, OK, SC, TN, TX) \$472,962

Refine and Regionalize Southern Phosphorous (P) Assessment Tools Based on Validation and State Priorities

The major objective of the project is to coordinate and advance phosphorous management in the South by ensuring that most southern phosphorous assessment tools have been tested based on guidance in the 2011 NRCS 590 standard and compared to water quality data. The project will also use these tools to produce more consistent results across physiographic regions in order to promote greater similarity between regional Phosphorous Index ratings and recommendations.

North Dakota State University (ND, SD) \$915,785

Drainage, Plant type, Cover Crops Mixtures, Soil Amendments, and Residue Cover Impacts on Soil Health, Crop Nutrient Uptake, Water Quality, and Productivity in the Northern Great Plains

The project goal is to determine the impact of using controlled drainage to reduce soil sodification, downstream flooding and water quality risks and compare with "free-drainage" systems. The project will develop management and soil amendment guidelines that optimize production on saline- and sodium-affected soils in the Northern Great Plains region. It will also develop non-drainage options that reduce salinization and sodification in high risk soils, maintain wildlife habitat and reduce flooding risks along the Red, Missouri, and Mississippi rivers.

Rocky Mountain Bird Observatory (CO, WY, UT, MT, NV, ID, OR, ND, SD) \$256,611

Informing Habitat Enhancement and Fence-Marking Projects to Increase Greater Sage-grouse and Other Sagebrush Obligate Bird Populations

The project goal is to develop a Decision Support Tool. Decision support systems are important tools in the adaptive management process due to the uncertain nature of managing natural resources. The tool will raise awareness for sagebrush obligate birds and determine most cost-effective fence markers.

The Curators of the University of Missouri (IA, KS, MO, NE) \$531,622

Validate, Improve and Regionalize Phosphorus Indices to Reduce Phosphorous (P) Loss Across the Heartland Region

This project will advance phosphorous management in the U.S. by developing and demonstrating procedures that ensure Phosphorous Indices are appropriately tested in accordance with the 2012 NRCS 590 Standard by meeting the following objectives:

- Identifying the most effective strategies for using the Agricultural Policy Environmental Extender, an existing fate-and-transport model, to evaluate Phosphorous Indices using data from existing watershed and large-plot studies;
- Evaluating and improve current Phosphorous Index formulations in Iowa, Kansas, Missouri and Nebraska; evaluate and compare potential P Index formulations for use as a regional P Index in the humid regions of Iowa, Kansas, Missouri and Nebraska;
- Engaging farmers, technical service providers, stakeholder groups, state and regional regulators and state NRCS staff to facilitate acceptance of recommendations in each state, facilitate more consistency across state borders, and demonstrate the utility of validated, calibrated P-indices for reducing P loss and protecting water quality; and
- Collaborating with similar projects in Chesapeake Bay, the South, and the national overarching CIG project to facilitate application of results to humid regions of the U.S.

The Pennsylvania State University (NY, PA, MD) \$688,684

Maximizing Conservation in the Chesapeake Bay Watershed with an Innovative New Three-way Interseeder to Early Establishment of Cover Crops in No-till Corn and Soybean

This project proposes to establish on-farm winter cover crop interseeding demonstration trials across the Chesapeake Bay watershed and document performance of the three-way interseeder. The project will also demonstrate the nutrient management benefits of coupling cover crop interseeding strategies with an online nutrient management tool (Adapt-N) and create case studies of farmers. It will also develop region-specific cover crop interseeding recommendations for the Chesapeake Bay watershed and provide this information to producers through innovative content delivery.

The Xerces Society, Inc (CA, OR, MN, MI, WI, NJ, PA, MA, NH, FL, WY, MT, IN, TX) \$997,815

Next Steps in Pollinator Conservation: Operations and Maintenance, Organic Habitat Restoration, Expanding Seed Mix Choices, and Assessing Conservation Effectiveness

This project proposes to develop a Long-Term Operations and Maintenance Guidance for Established Habitats. This will advance the Science of Habitat Restoration Using Organic Technique, will increase the Availability of High Value Plant Materials and will assess the Effectiveness of Restoration for Pollinator Communities.

University of Arkansas (DE, MD, NY, PA, VA, WV, IA, KS, MO, NE, AR, FL, GA, KY, MS, NC, OK, SC, TN, TX) \$57,924

Identify Methods to Refine Phosphorus (P) Indices and Synthesize and Extend Lessons and Outcomes from Three Regional Indexing Efforts

The overall goal of the project is to develop a national database of existing plot- and watershed-scale sites with more than three years of water quality measurement (flow and phosphorous concentration) and sufficient land management information to populate phosphorous indices and predictive models approved under the 590 Standard. This project will compare Phosphorous Index risk assessments with water quality data and validated predictive models for the combined field and watershed sites. It will also synthesize, summarize and describe the science-based information and lessons learned from the three regional Phosphorous Index assessment projects (i.e., Chesapeake Bay Watershed, the Heartland Region, and Southern States) and build a harmonized framework that yields consistent P-based risk assessment across the U.S.

University Of Delaware (DE, AR, PA) \$967,461

Innovative Approaches to Capture Nitrogen and Air Pollutant Emissions from Poultry Operations

The overall goal of the project is to help broiler producers adopt viable, practical, economical and effective strategies to improve their environmental performance, meet applicable federal and state requirements on air and water quality and to achieve strong, sustainable productive and profitable broiler producing operations. Demonstration sites will be broiler producers in Arkansas, Delaware and Pennsylvania.

The University of Vermont and State Agricultural College (WV, PA, NY, NH, NJ, VT, ME, CT, RI, MA, OH, MD, DE, VA) \$669,365

Energy Savings through Holistic Planned Grazing and management

The project is designed to assess and demonstrate energy utilization in both environmental and economic terms in order to help farmers adopt appropriate grazing practices to reduce reliance on energy inputs. It will measure and analyze energy inputs from 200 farms using a range of grazing management practices of which a minimum of 20 will include farms using the holistic planned grazing approach. Included in the analysis will be energy savings from feed or forage production, manure management and use of soil building techniques as compared to synthetic fertilizers.

Single-State Projects

Tuskegee University (AL) \$996,500

Tuskegee University Black Belt Photo Irrigation Project (TU-2BP)

The overall purpose of this project is to initiate effective demonstrations on limited resource farmers, new and beginning farmers and socially disadvantaged farmers that provide the steady production capacity needed to meet the market opportunities that have become available because commercial retailers are seeking to market locally and sustainably grown produce to customers who heavily weigh healthy and environmentally friendly decisions.

Tolani Lake Enterprises, Inc (AZ) \$431,703

Navajo/Hopi Solar-Powered Irrigation Pumping Systems – I Pilot Demonstration Projects

The project goal is to demonstrate the environmental, economic and socio-cultural effectiveness and sustainability of solar energy systems for pumping irrigation-quantities of water. The project will also encourage and facilitate the adoption of such systems among Navajo, Hopi and other Tribal Conservation Districts as well as farmers and ranchers in the arid and semi-arid Southwest.

University of Arkansas Division of Agriculture, Cooperative Extension Service (AR) \$969,299

Expanding the Implementation Capacity of Practice 799

The goals are to demonstrate the Lower-Cost Sampling Devices for Edge-of-Field Monitoring in the Lower Mississippi River Valley. The project will demonstrate telemetry options for prototype intermittent stream gauge to reduce travel costs and develop and deliver an Edge-of-Field Monitoring Training Program.

The Regents of the University of California (CA) \$333,074

Optimizing Water and Nitrogen Use Efficient Tillage and Legume Cover Crop Systems for California Tomato and Cotton Production

The goals of this project are to demonstrate soil quality improving practices, extend quantitative information on the impacts of different soil management practices that aim to optimize resource use efficiency, increase understanding of the extent to which these practices may improve soil quality, and create greater awareness of the importance of soil quality that will eventually lead to increased adoption of improved precision tillage and cover crop practices. Adoption of these techniques would result in cheaper crop production systems, increased carbon in the soil, reduced fertilizer use and nitrogen losses, and reduced dust.

The Regents of the University of California (CA) \$116,656

Farming for Native Bees

This project proposes to provide a stable, cost-effective and sustainable supplement to honeybee pollination through the establishment of new habitats that will conserve and protect California's native bees. The project will also educate Californians about native bees and their critical importance to agriculture.

Sustainable Conservation (CA) \$483,950

Demonstrate and Quantify the Effectiveness and Economics of a Reciprocating Biofilter (ReCip) for Removal of Lagoon Water Nitrogen on a Commercial Dairy in California's San Joaquin Valley

Sustainable Conservation has an organizational goal to reduce nitrate contamination of groundwater from dairy lagoon water in California. The purpose of the proposed CIG project is to demonstrate a simple, low-tech and effective biological wastewater treatment system on a commercial dairy. This demonstration will take place in a region with limited available cropland, highly permeable soils and a shallow groundwater table.

Colorado State University (CO) \$428,102

Learning from the Land: Extending State-and-transition Models for Adaptive Management of Western Rangelands

The purpose of this project is to streamline, test and evaluate the participatory development of state-and-transition models (STMs) that incorporate sage-grouse habitat conditions. This project will demonstrate their utility for adaptive management of sage-grouse habitat and livestock production, and thereby to increase awareness and adoption of STMs by ranchers while contributing to NRCS objectives of revising ecological site descriptions and promoting adaptive management and monitoring of sage-grouse habitat through the Sage-grouse Initiative.

The Nature Conservancy (IL) \$536,173

Bundling In-field and Off-field Nutrient Practices to Reduce Nutrient Export, Improve Drinking Water Quality, and Address Hypoxia in the Gulf of Mexico

This project will provide landowner outreach and education to increase understanding and stimulate enrollment in innovative conservation practices and programs and implement an adaptive nutrient management program and quantify its environmental performance. The project will also develop and refine replicable and transferable methods for producing watershed maps of tile-drained areas and apply watershed tile maps to guide locations for strategic outreach, wetland placement, and monitoring. It will also construct wetlands and quantify their environmental performance. Additionally, the project will quantify the environmental performance of a nutrient management program that bundles in-field and off-field practices for increased nutrient use efficiency and reduced nutrient export and develop and evaluate a watershed-scale management program for sustainable nutrient reduction that integrates ecosystem services (i.e., payment for services) with the nutrient management program developed during this project, previous research, existing watershed plans and current NRCS conservation programs.

Kosciusko County Soil and Water Conservation District (IN) \$184,347

Cover Crops: Planting the Way to Nitrogen Management at the Watershed Scale in a Combined Conservation Approach

This project proposes to implement cover crops across 50 percent of a sub-watershed in a tile-drained agricultural landscape in order to quantify and seek additional funding to implement another 25 percent of the watershed, too. Goals include monitoring the effect of cover crop planting on tile drain nutrient and sediment export and how that is reflected in stream nutrient and sediment export. It also aims to determine whether there is improved efficacy of an in-stream management practice (Two-Stage Ditch) when combined with a landscape management practice. Lastly, the project aims to provide a regional demonstration area for farmers that highlights the benefits of combining multiple best management practices at the watershed scale.

Purdue University (IN) \$177,646

Systems to Manage Swine Manure After Wheat: Fallow, Soybean, or Cover Crops

The overall goal of the project is to demonstrate field management systems (fallow, double-crop soybean, cover crops) for swine and crop producers that capture nutrients from swine manure applications and release these nutrients for the subsequent growing season. Various cover crop systems will be demonstrated for hands-on training and showcases. The project aims to demonstrate the effectiveness of field management systems to maximize the uptake of swine manure after wheat, to optimize the release of nutrients for the subsequent corn crop and to reduce environmental implications of swine manure applications. It also aims to show the establishment rates of field management systems and cover crop strategies with and without swine manure. Finally, the project aims to train producers, Extension educators, NRCS staff, crop professionals and nutrient managers through field days, workshops and winter presentations.

Indiana Association of Soil and Water Conservation Districts (IN) \$834,088

Conservation Cropping Systems for Soil Health and Productivity

The overall goal of this project is to integrate long-term continuous no-till/strip-till, cover crops, precision technology, nutrient management and pest management practices into productive, profitable and sustainable systems. The innovative approach to achieving this goal is through the regionally located training/demonstration site hubs, utilizing the inter-professional expertise of farmer-peer mentors, crop advisors, and Indiana Conservation Partnership staff. This innovative approach has the ability to be replicated in the Midwest while allowing for flexibility based on the needs and resources in other states and/or regions. The secondary goal is to measure and quantify the impacts of these conservation systems on soil health at regionally located agricultural production sites.

Maryland Department of Agriculture (MD) \$623,175

Creating a Certainty Program for Producers by Utilizing an On-farm Nutrient assessment and Best Management Practice Credit Tool Consistent with the Maryland Watershed Implementation Plan

This project proposes to increase producer and landowner adoption of conservation practices by creating a Certainty Program that rewards operators that have exceeded water quality goals and that utilizes the on-farm Nutrient Assessment Tool consistent with the total maximum daily load goals and to provide farmers with a clear understanding of the benefits of conservation to nutrient reductions.

Michigan State University (MI) \$321,667

Building Soil Quality with Strategic Integration of Low-impact Tillage, Cover Crops and Organic Inputs

The specific objectives of this project include the measurement and evaluation of the effects to alternative cropping practices on soil microbial respiration and of the soil organic carbon accumulation as an indicator of advances in soil health. The project also aims to answer grower's questions about cover crop nutrient cycling by monitoring such performance indicators as biomass yield, nitrogen uptake and release, and subsequent crop yields. It also aims to demonstrate and evaluate strategic selection and use of cover crop mixtures on crop growth and soil quality in row crops and develop and deliver educational materials to guide farmers in a systems approach to protecting and building soil health and natural productivity. The project also aims to increase farmer involvement in the development of practical, efficient and cost effective guidelines for improving soil health. Finally, it aims to develop and incorporate alternative management options for soil health in the NRCS Nutrient Management (590), Cover Crop (340), Waste Utilization (633), Residue Management (329A) and other relevant standards.

Michigan State University (MI) \$117,476

A Hybrid Biodiesel/Biogas Energy Production System

The purpose of this project is to demonstrate an effective bioenergy production system. The project's goal is to show that, by maximizing efficiency of the overall production process, cost-competitiveness of biodiesel for on-farm uses can be ultimately achieved. This approach is innovative in the sense that it takes advantage of the synergy between biodiesel and biogas production to maximize the overall production efficiency of biofuels. The project plan is designed to provide the USDA sponsor with a number of project metrics. The plan includes pilot-scale construction and operation, farm based demonstrations and outreach to the user and technical community via written and web-based media.

The Curators of the University of Missouri (MO) \$501,850

Multipurpose Cover Crop and Conservation Practices for a Sustainable Agricultural System to Improve Soil Health, Environmental Quality and Farm Productivity

This project will demonstrate the environmental benefits of adopting a production system focused on soil health and conservation practices. The project aims to measure in detail reductions in soil erosion, nitrogen, phosphorous, and herbicide losses and some measure of pesticide losses to surface water. It also aims to enhance wildlife richness and diversity by demonstrating increased richness and diversity of wildlife as a result of field edge buffers and cover crops. It also aims to demonstrate the economic benefits of adopting a production system of soil health and conservation practices with the goals of exhibiting increased productivity, decreasing input costs and increasing farm profitability. Finally, the

project will develop and implement a user friendly tool to recommend best management for cover crop selection, nitrogen application and economic return.

Rocky Mountain Front Weed Roundtable (MT) \$220,000

Implementation of a Cost-effective, Broad-scale, Integrated Weed Management Model

The project's goal is to change weed management from less effective treatment of established weed patches to cost-effective, integrated weed management using all appropriate techniques. This will be carried out while maintaining or enhancing the ecological and economic health of the Rocky Mountain Front. This project will differ from traditional approaches by focusing on strategies that will maintain agricultural economic values by preventing expansion of weed populations, based on coordinated, strategic focus on the set of highest priority actions with positive economic returns. The project will employ integrated pest management (e.g., prevention, locally successful biological controls, spraying and pulling) to focus on the priority actions necessary to achieve broad-scale success across watersheds and provide a framework for long-term sustainability.

Clark Fork Coalition (MT) \$54,066

Evaluation of Watson Horizontal Flat-rate Fish Screen in Montana

The overall goal of the project is to evaluate, improve and promote a promising fish screen technology for small-scale irrigation diversions that is locally fabricated in Montana.

Cascade County Conservation District (MT) \$1,000,000

Agricultural Application of an Innovative Mid-scale Wind Turbine Design

The goal of the project is to demonstrate the viability of an appropriately scaled, reliable, cost-effective, and visually acceptable wind turbine. This will fill a largely vacant mid-size niche in the turbine market. This project is intended to demonstrate that an innovative, silo-shaped, reliable, and easily-maintained 100kW wind turbine, the Zilo®, can be installed, owned and operated on site while decreasing long-term costs, displacing the use of fossil fuels, blending into the landscape and giving operators a significant degree of control over their energy futures.

Board of Regents, University of Nebraska-Lincoln (NE) \$490,340

Impact of Rotational Cover Crops on Soil Quality Parameters, Soil Water Holding Capacity, Soil-water Retention Curves, and Field-scale Water Balance Dynamics

The main goal of our project is to provide data, information and collaborations for the integration of water balance, energy balance and microclimate parameters in cover crop recommendations and management practices. Under this purpose, the objective of this project is to develop the relationship of cover crop effects on soil quality and water availability for field crop production to atmospheric and environmental parameters.

North Carolina State University (NC) \$293,151*Ammonia Recovery from Swine Urine Liquid with Selective Membrane Technology*

The overall goal of the project is to demonstrate the operation and feasibility of a permeable membrane system to recover and concentrate ammonia from three waste treatment and collection systems. This technology, which can also be applied to lagoon systems, has the potential to not only prevent significant ammonia volatilization but to also recover ammonia in a useful and transportable form.

The Ohio State University (OH) \$999,987*Evaluating/Updating the Ohio Phosphorus (P) Risk Index Using Field-Scale, Edge-of-Field Monitoring Data*

This project proposes to evaluate and as necessary revise and update the current Ohio Phosphorous Risk Index through use of field-scale, edge-of-field monitoring data. It will quantitatively, integrate additional best management practice (BMPs) options into the Ohio Phosphorous Index and develop a web-based, easy to use, interactive geographic information system (GIS) tool (web-based tool) that allows producers to easily calculate their Ohio Phosphorous Index scores. The project will also choose from a suite of additional BMP options to aid with management decisions to reduce their risk of phosphorous transport (Ohio Phosphorous Index scores). This web-based tool will also be used for education purposes and to actively promote increased implementation of the revised/enhanced Ohio Phosphorous Index. Significant statistical analyses will be required to evaluate/revise the Ohio Phosphorous Index, integrate additional BMP options and to develop the on-line web-based interface.

Morgan Soil & Water Conservation District (OH) \$78,000*The Wind Works*

This project proposes to demonstrate the successful and economical use of windmill-powered water pumping plants to supply and distribute water to higher elevation pasture fields to enable livestock producers to increase the productivity, profitability and sustainability of their overall grazing system and livestock operation

Oklahoma State University (OK) \$300,690*Systems-based Cropping 2.0: Leveraging Soil Health Demonstrations through Web-based Tools*

This project aims to demonstrate, quantify and communicate the impact of biologically diverse crop rotations on soil chemical, biological and physical properties conducive to soil health. The project will demonstrate and communicate the adaptability and benefits of cover crops and "cover crop cocktails" to farmers, ranchers, Extension personnel and NRCS personnel and develop a web-based plant available water estimator that will provide stakeholder utility beyond the life of the project and increase visibility of Extension and NRCS services

Wy'East Resource Conservation and Development Council, Inc (OR) \$163,645

Variable Speed Drive Energy Optimization

The project results will detail the best practices for irrigation pumps with an existing variable speed drive (VSD) and future VSD systems. Actual energy savings, water savings and emissions reductions will be reported for each of the three years. Practical control algorithms will be provided based on energy conservation, watering uniformity and simplicity of operation. The data collected and criteria's established will be transferable to all irrigation pumping systems that utilize VSDs. The project is innovative because it builds on an energy savings device that is currently being used and takes the technology to the next level resulting in additional energy conservation. The focus is on energy efficiency, reduced water consumption and meeting the producer's needs.

The Pennsylvania State University (PA) \$801,535

Refining and Harmonizing Phosphorus (P) Indices in the Chesapeake Bay Region to Improve Critical Source Area Identification and to Address Nutrient Management Priorities

This regional project will coordinate the testing and revision of phosphorous management tools within the states encompassing the Chesapeake Bay watershed, with general objectives to harmonize site assessment and nutrient management recommendations with the NRCS 590 standard and to promote consistency within each of the Bay's four major physiographic provinces. This regional project is one of four (three regional, one national) proposed under coordination of SERA-17, with goals to support the refinement of state Phosphorous Indices and to demonstrate their accuracy in identifying the magnitude and extent of phosphorous loss risk and their utility to improve water quality. The proposed project will promote innovations in phosphorous management at state (harmonizing Phosphorous Indices) and local (changes in behavior of farmers and/or technical service providers developing and implementing Phosphorous Indices) levels to enhance the health of the Chesapeake Bay. The project involves six objectives designed to ensure that refinement of Phosphorous Indices is grounded in the best available science, reflects local conditions and concerns and anticipates impacts to water quality and farm management.

City Roots, LLC (SC) \$51,942

Converting to No-Till on a Functioning For-profit Urban Vegetable Farm

This project proposes to convert one third of our workable acreage to no-till in each successive year, allowing the organization to completely use no-till after three years. The project will maintain/increase farm production during the conversion to no-till, allowing a comparison of production between no-till and tilled section. This project will improve soil function, including its ability to hold and infiltrate water and to recycle nutrients. The project also includes the organization of outreach programs at City Roots for at least 100 people per year on no-till farming.

Clemson University (SC) \$351,585

Demonstration of Innovative Interseeding Technology for Crop Rotations to Enhance Soil Properties and Reduce Energy Consumption and Pest Occurrence While Optimizing Farm Profits

This project proposes to modify planting equipment of 20 Environmental Quality Incentives Program eligible farmers to allow for interseeding and establish six "Prototype Fields" per year to directly train producers of soybean, cotton, peanut and wheat in the use, benefits and effectiveness of interseeding

technology. The project will also demonstrate and evaluate the effects of interseeding technology combined with crop rotations on soil chemical, physical, and biological properties, fuel consumption, pest management and farm profits. The project also aims to implement an aggressive training program for crop consultants, technology providers, and county Extension agents to become the primary providers of interseeding technology for growers beyond the geographic and time limitations of this project.

The University of Tennessee (TN) \$502,916

On-Farm Production and Utilization of Energy to Meet Wintertime Heating Needs at Broiler Chicken Grow-out Farms

This project will demonstrate the affordability, effectiveness, and usability of a hydronic heating system for broiler production houses and utilize readily available biofuel and byproducts as a heating fuel. It also will demonstrate and verify the environmental impact of the heating system and transfer the knowledge gained from the demonstration project.

The University of Tennessee (TN) \$257,130

Energy Conservation for Organic High Tunnel Production through Rain Water Utilization, Ventilation Management, Soil Mulches and Cover Crops

This project proposes to collect, store and irrigate with rainwater captured from high tunnels using gravity pressure or solar power to avoid power consumption from pumping ground water and surface water supplies. This project will manage the passive ventilation systems in high tunnels to create more optimum air temperatures for plant growth without the need for power consuming fans. It will use soil mulches and a row cover inside high tunnels to create more optimum soil and crop canopy temperatures by increasing absorption of solar radiation and reducing night time heat loss without using power consuming heaters. The project will also establish and incorporate winter and summer cover crops in high tunnels to improve soil quality and increase biologically-fixed nitrogen reducing the energy required to produce and transport organic or conventional fertilizer. It will also demonstrate the benefits of energy conserving practices in high tunnel production to promote adoption of these sustainable methods through on-farm demonstrations, field days, workshop presentations and Extension fact-sheets.

Trout Unlimited (WA) \$219,006

Methow Basin Water Exchange

This project builds on the investments of NRCS and other funders in irrigation efficiency through the development of the Methow Basin Water Exchange Cooperative Project (WEC), an innovative approach to enhance instream flows in the Methow River and its two largest tributaries. This will be done while facilitating a formalized water exchange to other agricultural water users. The WEC, inspired by the agricultural governance structures of exchanges and farmer cooperatives, will be supported by participation of local stakeholders including agriculture producers, water users and others providing oversight over integrated habitat and water planning documents. It will ensure the protection of instream flows, sharing of information and identification agricultural water needs such that water transfers to other users would ensure benefits to both fish and farms.

West Virginia University Research Corporation (WV) \$82,911

Improving Soil Health and Nutrient Recycling with Cover Crops for Beginning High Tunnel Specialty Crop Growers

The project purpose is to demonstrate the integration of cover crops to high tunnel production systems. The additive effects of high tunnels and cover crops will be demonstrated to beginning, limited resource high tunnel producers. Cover crops will be shown to facilitate rotations, as well as improving soil health, reducing soil moisture evaporation, fertilizer application, secondary tillage and weed emergence.

Board of Regents of the University of Wisconsin System (WI) \$134,850

Phosphorous (P) Index and Snowmelt Runoff Risk Assessment: Demonstration and Refinement

This project proposes to demonstrate the ability of a process-based Phosphorous Index formulation to assess management effects on runoff phosphorous losses from fields under frozen soil conditions. The project will test and refine the method used in a process-based Phosphorous Index to determine the effect of field management practices on frozen soil runoff volume and adapt the refined frozen soil runoff risk assessment method (within the process-based Phosphorous Index) to identify field conditions and management practices capable of minimizing runoff when animal manure is applied to frozen soils. This project will promote NRCS Conservation Practice Standard Code 799 Monitoring and Evaluation by demonstrating the prototype flow measurement gage on farm fields under winter conditions observed in Dane County, Wisconsin. It will also improve the functionality of the prototype flow gage by adding a user-friendly interface that will allow landowners to easily access gage data.