



Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-280

Proposal Title: Economic and Ecological Benefits of Soil Health

Project Manager Information

Name: Scott Wold

Organization: Redwood Soil & Water Conservation District

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Project Basic Information

Project Summary: To provide real world economic results of cover crops and alternative tillage implementation. Environmental benefits do not have to come at a cost of bottom line profitability.

Funds Requested: \$339,000

Proposed Project Completion: 2024-12-31

LCCMR Funding Category: Methods to Protect, Restore, and Enhance Land, Water, and Habitat (F)

Project Location

What is the best scale for describing where your work will take place?

Region(s): SW

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

We are looking to address and overcome the remaining barriers for cover crop and alternative tillage adoption on Minnesota farms. There has been a noticeable increase in cover crop and alternative tillage adoption in the past decade, however the percent of lands utilizing these practices remains low. Farms are complex operations, and any change to that operation must be done carefully. The main barrier to cover crop and alternative tillage adoption is overcoming the uncertainty in a new practice. Farmers need reliable information about how to implement these practices, what the effects will be on their field, and what the effects will be on the farm economics. While research on cover crops and alternative tillage has been done in Minnesota that research has been done in highly controlled fields. How those results transfer over to “real” farms can be hard to sell to producers. Currently we don't have any large scale side by side comparisons of traditional management compared to cover crops and alternative tillage. In order to get large scale implementation, real world data from a profitable farm is vital.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

We are proposing to conduct a study utilizing active farming operations to illustrate side by side results of cover crop and alternative tillage techniques compared to traditional management. The focus will be on tracking the success of practice implementation and the effect it has on the economics of the farming operation. We will be tracking specific factors in order to provide a comprehensive overview on the impact to a farming operation. To accomplish this we propose to implement cover crops and alternative tillage on 2,000 acres of private land over a period of 3 years. We will divide current farms into two parts, one part will implement cover crops and alternative tillage, and the other part will retain traditional techniques. Through various tests and ongoing tracking we will provide real world side by side comparisons of the effects of cover crops and alternative tillage. Our research will focus on the impacts to soil health and on farm economics. We will track these changes and classify these results based on 4 soil classes. This data will then be synthesized and distributed to individuals and groups throughout the state in order to encourage greater implementation.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

We will demonstrate the benefits of cover crop and alternative tillage technique implementation, and how it can be more profitable than traditional management. Our focus will be on the impact to the farm economics in order to prove that this can be successfully implemented on a profitable farm. By illustrating that these practices can be more profitable than traditional techniques, we will provide a compelling reason for individuals to adopt these practices. By tracking changes in soil health, we will be able to calculate the benefits the practices have on reducing water runoff and improving water quality of nearby waters.

Activities and Milestones

Activity 1: Cover Crop and Alternative Tillage Research

Activity Budget: \$89,000

Activity Description:

We will be conducting initial assessments on all tracts of land in the study to establish the baseline conditions of the fields. Initial soil health testing will include grid sampling, infiltration, Visual Evaluation of Soil Structure (VESS), soil stability, residue percentage, penetration, soil temperature, bulk density, soil life, roots, the Haney soil test, and the Phospholipid fatty acid (PLFA) test. The tests will again be completed at the conclusion of the study to compare to our initial baseline information. Soils and the end results will be tracked based upon 4 different soil classes. This soil classification will allow us to extrapolate the results to many different farms within our County, Region, and State.

Throughout the study we will be tracking a comprehensive set of economic data. This data includes the following costs: harvesting, grain, equipment, planting, planting cover crop, spraying, tillage, fuel, seed, cover crop seed, fertilizer, pesticides, cover crop termination, insurance, grain handling, grain hauling, grain drying, land, labor, overhead, personal, custom hire, and others. We will also closely be tracking the average yield on each field.

Activity Milestones:

Description	Completion Date
Baseline data collected	2022-06-30
Final data collection	2024-11-30

Activity 2: Data Synthesis and Publication

Activity Budget: \$100,000

Activity Description:

At the end of the study we will be working closely with outside professionals in order to fully synthesize the data collected. We will be working with an economist to assist us in analyzing and processing the economic data. We will also be working with an environmental consultant to assist us with synthesizing and displaying the ecological data collected. This data will be prepared in a straight forward easy to understand visual format, outlining the results of our study.

We will share the results of our study through print, online, video forums, as well as by hosting several cover crop and alternative tillage demonstration days in year 3. Our publications will center on an online web portal which will contain all of the results of our study. During the project we will be utilizing video to capture various stages of the process. During year 3 of the study we will host up to 3 field days showcasing the results of the study for the general public. We will be utilizing a state wide distribution network to invite the public to the field days and to distribute the information we have collected.

Activity Milestones:

Description	Completion Date
Marketing Material Preparation	2024-12-31
Field Days	2024-12-31
Data Synthesis	2024-12-31

Activity 3: Cover Crop and Alternative Tillage Implementation

Activity Budget: \$150,000

Activity Description:

We are proposing to implement cover crops and alternative tillage on 2000 acres for a 3 year contract. These acres will be established directly next too similar acreage that will maintain the traditional management practices for a total of approximately 4000 acres in the study. Individuals will be paid a cost share for the acres they are committing to implement cover crops and alternative tillage on for the next 3 years at a rate of \$25.00/acre/year. These individuals will be required to allow us access to their private property during the study in order to complete our research. We will find several individuals to allow us to post materials near their field creating an onsite demonstration plot of the project's activities. District staff currently has enough interest if we are funded that most of our acres are already able to be implemented.

Activity Milestones:

Description	Completion Date
2000 acres committed to the 3 year study	2021-12-31

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

The Redwood Soil and Water Conservation District will continue to market the results of this study. We hope that this study overcomes the largest barriers we experience locally to implement these practices. By continuing to update our materials, we will not only be accomplishing our mission locally, but supporting the broader initiative across the state. We will be asking our landowners participating in the study to continue conducting several of the tests we use to measure soil health progress and reporting those results to us. This work will be funded through the Redwood SWCD.

Project Manager and Organization Qualifications

Project Manager Name: Scott Wold

Job Title: District Administrator

Provide description of the project manager's qualifications to manage the proposed project.

Redwood Soil and Water Administrator and Redwood County Environmental Director Scott Wold will be the project lead. Scott received his law degree along with a masters in environmental law degree from Vermont Law School. Scott has 8+ years of project management experience and has overseen many state and federal grant funded projects. Scott currently oversees budgets totaling over \$2,000,000 and monitors all expenditures and revenue generated. Assisting Scott in ensuring successful project implementation is Brian Pfarr. Brian has over 20 years' experience in working for the District as well as NRCS, and has assisted landowners all of the County in implementing these practices. Brian is a farmer himself and is well situated to ensure that this project is successful on the ground.

Organization: Redwood Soil & Water Conservation District

Organization Description:

The Redwood SWCD is a local unit of government established to address soil and water conservation concerns within the county. They provide technical and financial assistance to landowners and operators to allow them to install, establish, and maintain effective conservation practices on the land they own or farm. Staff includes three technical people and two administrative employees. The Redwood SWCD has an annual operating budget of a half million dollars and manages approximately \$1,000,000 in grant funds directly spent on local conservation practices.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Administrative Staff		Grant Administration			20%	0.3		\$14,000
							Sub Total	\$14,000
Contracts and Services								
TBD	Professional or Technical Service Contract	Consultant will assist us in conducting data collection in the field.				0.75		\$55,000
TBD	Professional or Technical Service Contract	Consultant will assist in compiling all of our data and putting it into a professional report. This report will be heavy on visual representations and highlight success and economic implications.				0.5		\$60,000
							Sub Total	\$115,000
Equipment, Tools, and Supplies								
	Tools and Supplies	will be used for infield soil testing equipment, including, infiltration rings, maul, thermometers, shovels, penetrometer, soil sampling kits, tape measures, flags, tarps, slake jars, soil stability test kit, scale, and other miscellaneous supplies.	Supplies necessary to conduct infield soil testing					\$4,000
							Sub Total	\$4,000
Capital Expenditures								
		20 data infield data loggers	provide real time in field soil information recording temperature and moisture content					\$23,000
							Sub Total	\$23,000

Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
							Sub Total	-
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
	Printing	Promotional materials and mailings	To share the results of our study					\$6,000
	Printing	Signage and educational materials	Signage and handouts to be available at several of our study plot areas.					\$8,000
	Publication	Website portal creation	To provide a single destination to see the results of our study					\$5,000
	Publication	Video recordings of study in progress	To provide compelling visuals of what these practices look like in action					\$6,000
							Sub Total	\$25,000
Other Expenses								
		Landowner costs share for study participation	Landowners will be paid \$25.00/acre/year to commit to the study					\$150,000
		Cover Crop Field Days	Conduct 3 field days in the 3rd year of the study to demonstrate results					\$8,000
							Sub Total	\$158,000
							Grand Total	\$339,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
In-Kind	Local District Funds	Landowner outreach	Secured	\$20,000
In-Kind	Local District Funds	Field data collection	Secured	\$30,000
			Non State Sub Total	\$50,000
			Funds Total	\$50,000

Attachments

Required Attachments

Visual Component

File: [db55f583-8cc.pdf](#)

Alternate Text for Visual Component

Cover Crops in corn.

Board Resolution or Letter

Title	File
Board of Supervisors Letter of Support	83a80e18-0ab.pdf

Optional Attachments

Support Letter or Other

Title	File
Letter of Support - WENCK Associates	4a83eab2-499.pdf
Letter of Support - Michael Spencer, Ph.D.	0e996bac-afb.pdf
Letter of Support - Meadowland Farmers Coop	d1e5fdb1-402.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

Yes, Redwood County



