

Managing Pasture for Healthy Farms and Soils Across Vermont: NRCS On-Farm Trials Soil Health Conservation Innovation Grant

The Vermont Land Trust has partnered with Bio-Logical Capital and the University of Vermont on a five-year Conservation Innovation Grant (CIG) through the Natural Resources Conservation Service. The project falls under the Soil Health Demonstration component of the On-Farm Trials. The NRCS Soil Health Demonstration On-Farm Trials grant program features collaboration between NRCS and partners (typically farmers) to implement on-the-ground conservation activities and evaluate their impact, specifically the implementation of conservation practices and systems that improve soil health. The goal of the “Managing Pasture for Healthy Farms and Soils Across Vermont” CIG project is to advance soil health and support farmer livelihoods in Vermont by implementing and evaluating the outcomes of a four-part soil health management practice on farms. This work is supported by the Conservation Innovation Grants program at USDA’s Natural Resources Conservation Service.

FREQUENTLY ASKED QUESTIONS

Who are the partners in the project?

U Vermont Land Trust was founded in 1977, VLT has conserved over 11% of Vermont and 20% of Vermont’s agricultural soils. VLT works with over 780 producers across the state on issues of conservation, land management, regulatory compliance, and land access. VLT has received and managed numerous United States Department of Agriculture (USDA) awards in collaboration with the Vermont Housing & Conservation Board through the federal Agricultural Conservation Easement Program and the Beginning Farmer and Rancher Development Program.

Bio-Logical Capital is a land advisory, development, and conservation company. BLC has expertise and experience in land analysis, site planning, project management, transactional finance, business planning, and investment structures. BLC is the operating partner for Philo Ridge Farm, a 400-acre former dairy farm in Northwestern Vermont with five years of operation using the Soil Health Management System described in this proposal.

The University of Vermont will participate through the Department of Plant & Soil Sciences, Department of Community Development and Applied Economics, and Interdisciplinary Graduate Program in Food Systems. The University of Vermont - Extension, Center for Sustainable Agriculture, will provide technical assistance for all of the participating farms in addition to private consultants.

What is the work of the project?

The funding provided by USDA Natural Resources Conservation Service (NRCS) will pay 15-20 farmers to implement soil health management practices using grass-fed livestock. Field data will then be collected at each participating farm over the course of 5 years to understand the ecological, social, and economic impact of adopting and maintaining these practices. Working with the University of Vermont, Bio-Logical Capital will correlate the multi-year series of field data with satellite and remote sensed imagery to build an empirical machine learning model that predicts the outcomes of adopting the studied farming practices across the Vermont farm landscape.

What kinds of farms can participate? Is there a minimum farm size to participate?

Most importantly, farms need to be willing to commit to participating over the course of the 5 years of the project. Participating involves allowing and supporting annual data collection on your farm by project team members, adoption of the 4-part soil health management practices, and a willingness to work with necessary technical service providers. Farmers are required to be raising ruminant livestock and would ideally be managing at least 100 acres, although there is not a minimum farm size requirement. Farmers who are interested in participating should complete our intake form.

Vermont Land Trust has partnered with Bio-Logical Capital and the University of Vermont to carry out a \$2,640,000 Natural Resources Conservation Service Conservation Innovation Grant to advance the adoption of soil health management practices across Vermont farms.



FREQUENTLY ASKED QUESTIONS

How long is the project?

The grant will begin in 2021 and run through the end of 2025. Here is a basic overview of the activities of each year of the project.

Year 1

- Applications for producers become available and cohort of producers assembled
- Baseline sampling for reach producer is completed
- Baseline ecological, economic and social assessments are completed on each farm
- Individualized plan is created for each farm

Year 2-5

- 4-part soil health management system is implemented on selected farms
- Farmers receive support from technical assistance providers to implement individual farm plans and learn systems that they might not already be incorporating such as Management Intensive Rotational Grazing (MIRG).
- Data collected and evaluated at each farm
- Incentive payments distributed

Why is this project important?

We believe that grass-fed livestock is a promising production system but the lack of reliable evidence for economic viability and environmental outcomes prevents widespread adoption. Grass-fed beef and other livestock represent an exciting opportunity for both young and aging producers, but viable production requires new management practices in order to increase profitability and see benefits to Vermont's environment and farm economy. Despite anecdotal evidence and research on individual practices, there is no quantitative ecological or economic data showing the outcomes of this combined four-part Soil Health Management System (SHMS) on soil health and farm productivity.

What equipment and supplies will be offered to farms to use during the project?

Participating farms will have access to a drill seeder, compost spreader, soil water sensors, and livestock tracking systems (e.g., pasture map and in certain cases, GPS tags for livestock) to use over the course of the project. We are working with a startup company, Takkacor Technologies (www.takkacor.com) to make new temperature and soil moisture sensors available to participating farmers. All other supplies and equipment will need to be purchased by the farms, including necessary fencing, water supplies, and other MIRG infrastructure.

What will we be measuring on the farms?

We will be completing an ecological, economic, and social assessment on each farm over the course of the grant. The ecological assessment will specifically look at (1) soil health (physical, chemical, and biological); (2) forage biodiversity, quality, and quantity; (3) water infiltration, quality, and agricultural runoff; and (4) animal performance and grazing management. Both the economic and social assessment will be conducted through surveys and farmer interviews - these assessments are intended to understand the impacts of adopting these practices.

Who will cover the cost of the ecological assessments, sampling and testing?

All ecological tests, samples, and other assessments that are conducted as a part of this project, including instruments and supplies needed for conducting the tests, will be funded by the grant and project farmers, at no cost to the participating farms. The Data Collection Stipend is intended to cover any time needed by the farms to support the gathering and provision of the ecological, social, and economic data gathering and testing.

How will data be used?

We are collecting soil health and farm financial data to improve soil quality and help make farming an economically viable pursuit. All ecological tests, samples and other assessments that are conducted as a part of this project will be stored on local hard drives by the project team, and will be anonymized (with names removed) with locations given at a municipal level as a privacy protection. Financial data shared with the project will be coded so that it can be anonymized and without location data, protecting private details of all participants. We are required by NRCS to contribute soil health data to databases, and will only do so with anonymized data. Our team also expects to write papers about data collected in this project to contribute to the scientific literature on agricultural practices that build soil health, but will not release data that can be traced to specific farms or farmers.

FREQUENTLY ASKED QUESTIONS

How do farmers get paid for participating?

The grant will provide payments to participating farmers on a per-acre basis for each practice, in addition to an annual stipend for data collection (data collection will be supported by project partners). The practices include, primarily: (1) no-till cover crops to increase soil and plant diversity in pastures and hayfields; (2) spreading finished compost for soil amendment; (3) subsoil keyline plowing to reduce compaction and increase water infiltration where needed; and (4) Management Intensive Rotational Grazing (MIRG) for improved livestock production.

If you are already incorporating some or all of these practices (or none), you are still eligible for payment and eligible to participate. Payments will be prioritized for practices that are not currently being implemented, but will be determined based on each farm's current production practices and scale of implementation.

An outline of the payment structure for participating in the project is below:

Data Collection: \$1,200 stipend per year (years 2021 - 2025)

Payments for Practices: (years 2022 - 2025)

- No-till seeding of cover crops -
 - Drill Seeding and/or frost seeding of diverse cover crops (assumes applied to 50% of total acreage) - \$45 per acre
 - Converting land to pasture that has been previously tilled or planted in row crops - \$150 per acre (this payment only applies to 2022, the first year of implementation)
- Subsoil and keyline plowing (assumes applied to 10% of acreage) - \$15 per acre
- Nutrient management via compost application (assumes applied to 75% of total acreage) - \$10 per acre
- Managed Intensive Rotational Grazing of livestock - \$80 per acre

Mentorship:

For farms that are already incorporating all of these practices and are interested in participating in the project, we will offer payment for mentorship of the other participating farms in the cohort on an hourly basis, based on mentoring farm availability and mentorship need. We will pay \$25 per hour of mentorship for up to 40 hours per mentoring farm in year 2 (2022), and up to 85 hours of mentorship per mentoring farm in years 3-5 (2023-2025).

Examples of Total Payments Based on Type of Farm

Example 1:

Farm Currently in Row Crop Production, 100 acres

Data Collection: \$1,200 per year x 5 years = \$6,000

Payments for Practices

- No-Till Seeding = \$45 per acre x 50% of acreage x 100 acres x 4 years = \$9,000
- Converting Land to Pasture = \$150 per acre x 100 acres x 1 year = \$15,000
- Subsoil and Keyline Plowing = \$15 per acre x 10% of acreage x 100 acres x 4 years = \$600
- Nutrient Management via Compost Application = \$10 per acre x 75% of acreage x 100 acres x 4 years = \$3,000
- Managed Intensive Rotational Grazing of Livestock = \$80 per acre x 100 acres x 3 years = \$24,000

Total Payments Over Course of Project = \$57,600

Example 2:

Farm Currently Rotationally Grazing Livestock, 150 acres

Data Collection: \$1,200 per year x 5 years = \$6,000

Payments for Practices

- No-Till Seeding = \$45 per acre x 50% of acreage x 150 acres x 4 years = \$13,500
- Converting Land to Pasture = Not eligible (unless expanding grazing operations to new pasture)
- Subsoil and Keyline Plowing = \$15 per acre x 10% of acreage x 150 acres x 4 years = \$900
- Nutrient Management via Compost Application = \$10 per acre x 75% of acreage x 150 acres x 4 years = \$4,500
- Managed Intensive Rotational Grazing of Livestock = Likely will not receive payment for this practice, depending on current nature of rotational grazing operations

Mentorship - \$25 per hour x 9 hours per farm (2022) x 4 farms + \$25 per hour x 20 hours per farm (2023-2025) x 3 years x 4 farms = \$6,900

Total Payments Over Course of Project = \$31,800