

**Project Title:** Researching Strategies for Improving Vermont's Soil Health Through Perennial Grazing Crop Development project

**Applicant:** Dartmouth College

**Abstract**

Dartmouth College (hereafter the College) is applying to NRCS' Conservation Innovation Grants (CIG) for Federal fiscal year (FY) 2019 – Vermont, for the amount of \$75,000 with a minimum match of \$75,000 from the College and partners (in cash and in-kind) to conduct the Researching Strategies for Improving Vermont's Soil Health Through Perennial Grazing Crop Development project. The College proposes testing how planting a perennial wheat will affect soil health, net energy use/carbon emissions, and forage quality on dairy and beef grazing operations throughout Vermont. Specifically, this project will be carried out at Lucas Family Farms LLC, Orwell, Vermont; Butterworks Farm, Westfield, Vermont; and Broad Acres Farm/Shire Beef, Vershire, Vermont.

Soil health is essential to the well-being of Vermont's food supply, water quality, ecosystems, and even the global climate. By implementing this innovative approach on three farms, the College will be able to demonstrate the soil and water quality benefits, along with the applicability and transferability of this approach. The College will test the efficacy of using perennial wheat to increase soil organic matter and improve soil health while providing both forage (grazed) and silage (mowed and stored) to pasture-fed cattle across three Vermont farms, two beef cattle and one dairy. The predicted benefit is based on the quality of the proposed wheat, which is a sod-forming, deep-rooting perennial and thus has more potential to increase soil organic matter across the soil profile and specifically in the deep soil compared to traditional forage in New England, which consists of comparatively shallow rooting perennials.

Furthermore, wheatgrass produces a dense network of roots that has the potential to intercept and take up inorganic nutrients like nitrogen and phosphorus before they leach through the soil profile and into surface waters. This study will be innovative, as this wheat has not been previously tested as food source for grazing animals like beef and dairy cattle in our climate zone. Through a series of workshops, a fact sheet and on-farm demonstrations, the College and its partners (Vermont Grass Farmers Association and University of Vermont) will achieve substantive outreach to Vermont farmers.

The objective of this project is in alignment NRCS CIG VT state priority of soil health. This project will implement new technologies and methods that enhance soil resources associated with agricultural and/or forest land uses while sustaining productivity.

The technical contact for this project is Caitlin Pries, Assistant Professor of Biological Sciences at Dartmouth College: (603) 646-2052. The administrative contact for this project is Robyn Hadlock, Arts & Sciences Grant Manager at Dartmouth College: (603) 646-1019.