

# UVM CENTER FOR SUSTAINABLE AGRICULTURE GRASS FARMING RESEARCH: HOW CAN INCREASED SOIL ORGANIC MATTER ADD UP TO GREATER PRODUCTIVITY?

## ABOUT THE RESEARCH

This project is taking place on a 400-acre Champlain Valley diversified beef farm with long previous use as a dairy operation. Its recent history includes heavy tillage and synthetic inputs, and the increased frequency of extreme weather events, which both have contributed to soil erosion and disaggregation and resulted in degraded fields. The Center's research team is helping the current farmers recover the soils by monitoring and researching soil health and pasture forage ecosystems as they relate to the production of high-quality, grass-fed, grass-finished beef!

We see pasture-based farming as an inseparable triad of well-functioning soils, abundant and high quality forages, and healthy livestock animals in a constant and balanced rotation. Preliminary research results are indicating what many grass-based livestock farmers have been finding and saying for years: that the practices that support biodiversity, carbon sequestration, water quality and animal welfare are also good for a farmer's financial bottom line.



## BACKGROUND AND METHODOLOGY

The research location is a 400-acre Champlain Valley diversified beef farm with long previous use as a dairy operation. Past practices that include heavy tillage and synthetic inputs, and the increased frequency of extreme weather events have contributed to soil erosion and disaggregation and resulted in depleted fields. By applying key principles of grazing for soil health, the project has resulted in an increase of 1.7% soil organic matter since 2015. The ecological benefits of improved soil health are well-documented, but there is also a strong case to be made for its benefits for farm productivity and economic bottom line as well.

The preliminary findings detailed on the other side of this sheet show that by applying the four basic principles of soil health\*, farmers can preserve their own financial viability alongside their efforts to protect natural resources.

\* 1. Well-covered soils 2. Biodiversity above and below ground, 3. Animals graze all fields at least once per year.  
4. Let roots flourish by not tilling.

Questions?  
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UVM CENTER FOR SUSTAINABLE AGRICULTURE GRASS FARMING RESEARCH:

# HOW CAN INCREASED SOIL ORGANIC MATTER ADD UP TO HIGHER PRODUCTIVITY?

4 YEARS OF APPLYING  
4 KEY PRINCIPLES OF SOIL HEALTH \*  
= 1.7% INCREASE IN SOIL ORGANIC MATTER (SOM)



- \*1. WELL-COVERED SOILS
- 2. BIODIVERSITY ABOVE AND BELOW GROUND
- 3. ANIMALS GRAZE ALL FIELDS AT LEAST 1X/YR.
- 4. LET ROOTS FLOURISH BY NOT TILLING

A 1.7% INCREASE IN SOM CAN HOLD 46,168 GALLONS OF WATER IN THE TOP 6" OF TOPSOIL OVER 188 ACRES, WHICH MEANS A

**1.7%** INCREASE IN SOM CAN TRANSLATE INTO  
**55,930 LBS. OF FORAGE\***, OR  
**69 ROUND BALES**

\* ASSUMES 175 LBS. OF FORAGE PER ACRE

**\$4,140 IN SAVINGS  
OR SALES OF BALES**  
&

**28 ADDITIONAL ANIMAL  
UNITS RAISED ON THE PASTURES\***

\* ASSUMES A 50% FORAGE UTILIZATION RATE



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