

# UVM CENTER FOR SUSTAINABLE AGRICULTURE GRASS FARMING RESEARCH: SOIL ORGANIC MATTER & WATER HOLDING CAPACITY

## ABOUT THE RESEARCH

Our 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. The four fields under study were previously managed as hay or crop fields, with no livestock presence. The data below reflects the changes in sampled soil organic matter after animals were added to these fields and managed in an active rotational-grazing system.

## INCREASING SOIL ORGANIC MATTER INCREASES WATER-HOLDING CAPACITY: RESEARCH PLOT RESULTS 2015-2017

Field Name	2015 SOM %	2017 SOM %	Change in SOM %	Increase in water-holding capacity (per acre)	Field Acres	Total increase in water-holding capacity
Grazing Field	4.0	5.7	1.7	45,900 gallons/acre	15	688,500 gallons
West Island Field	5.1	6.0	0.9	24,300 gallons/acre	7.5	182,250 gallons
East Island Field	4.0	5.1	1.1	29,700 gallons/acre	9	267,300 gallons
East Field (N)	4.0	5.6	1.6	43,200 gallons/acre	20	864,000 gallons
			<b>1.325 avg. increase</b>	<b>35,775 additional gallons/acre avg.</b>	<b>51.5 acres</b>	<b>2,002,050 gallons of increased capacity</b>

Questions?  
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