

Pasture and Grazing Programming  
Across UVM Extension:  
Creating Successful, Well-Managed Grazing Farms



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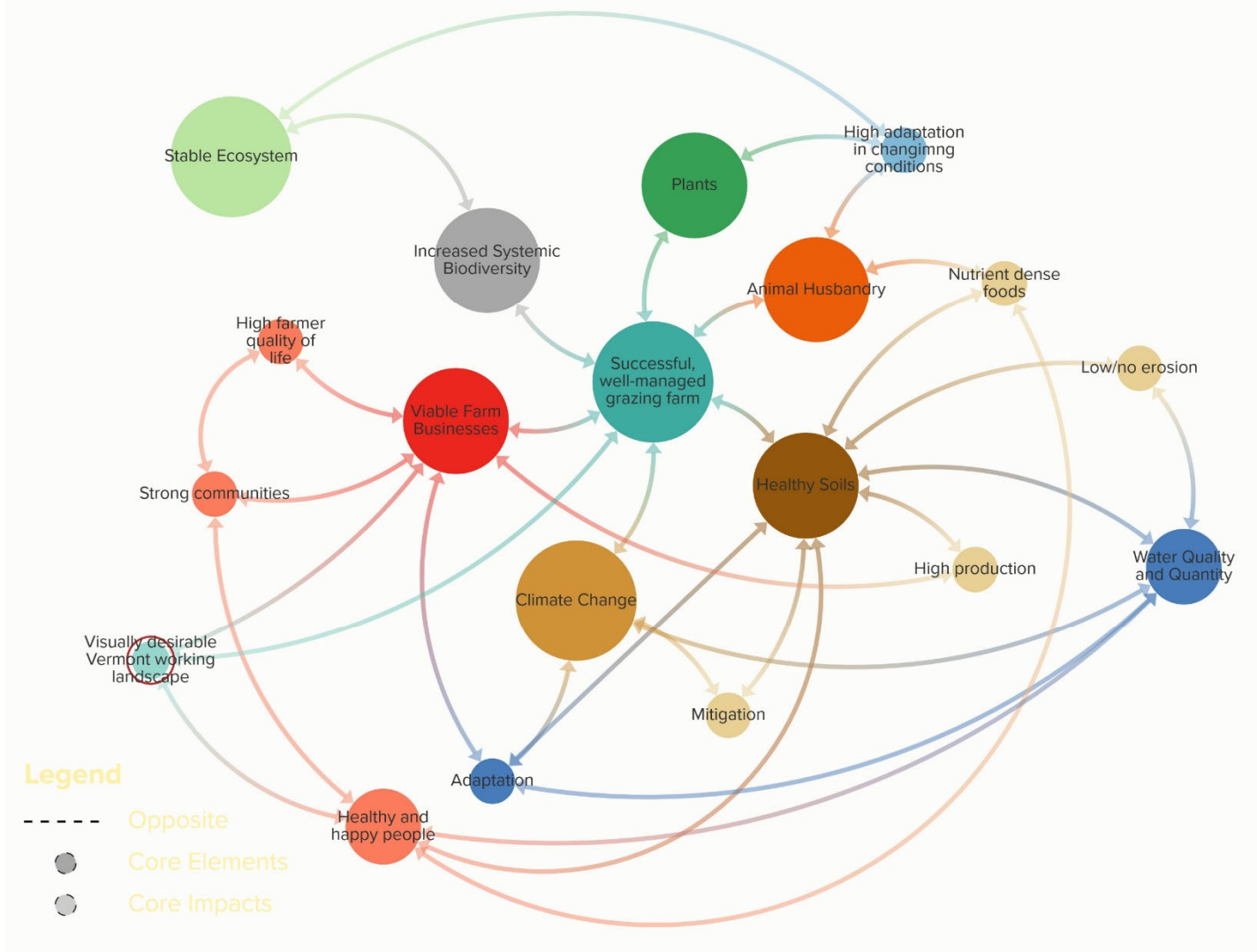
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## Background

Good grazing management is not a linear system—it is working within complex natural systems—but it has the capacity to address the complex agricultural issues we currently struggle with, within one targeted management approach. Good grazing management is multi-faceted and requires a high-level of technical understanding (“the science”), as well properly applied experience and judgement (“the art”) to be successful. When managed well, grass-based livestock farms have been shown to hold (and increase) soil formation and fertility; create a sponge to soak up rainfall and reduce or eliminate nutrient runoff; sequester more carbon dioxide than they produce (be a carbon “sink”); encourage biodiversity of microbes and wildlife; produce high quality meat and milk products with increased beneficial nutrients; encourage farm viability and farmer quality of life; and create a working landscape that enhances Vermont’s visual attraction to visitors and residents.

## Why Grazing? Why Livestock?

Increasingly, research and case study examples show it is not **what** is managed on land but **how** land is managed that makes the difference in seeing beneficial or destructive results. When managed well, grass-based livestock can be a solution for all sorts of environmental (water, soil, climate), social (community cohesion and human health), and economic (farms and connected businesses throughout the food system and ultimately the whole State of Vermont) factors. It is very easy to choose one area of focus to address a few (or a single) issue, but well-managed grazing has the demonstrated potential to improve many things synergistically.



The Ecosystem of Grazing

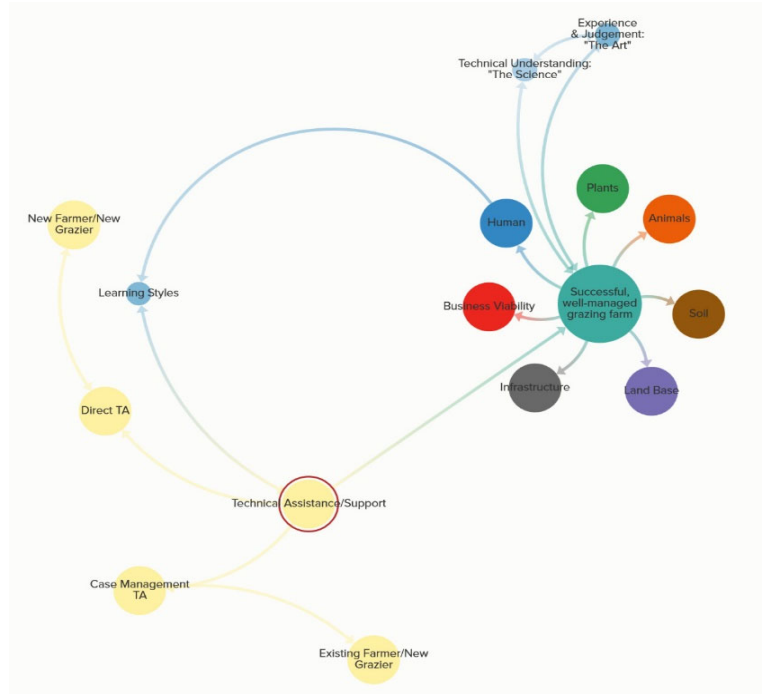
## Specific Challenges to Understand in Grazing Systems

### 1. Grazing Basics Interaction—A Change in Mindset Toward Complex Natural Systems

To understand different aspects of the grazing ecosystem, farmers need to be exposed to basic grazing topics and learn more about how their interactions will affect the others. While farmers may specialize in certain aspects (such as animal or forage management), an understanding of the consequences of decisions in one area on the results of other areas is essential for success. Getting people thinking in systems is key.

### 2. New Graziers vs. Existing/Transition Graziers

While the ultimate goal may be to establish some level of grazing on many farms, the pathway (and subsequently needs) of farmers can be very different. Working with new farmers without an existing system can operate in a much more “knowledge transfer” method of technical assistance. When working with a farm transitioning from a non-grazing or poorly managed grazing system, the time commitment is much higher, the land base needs may initially increase (or the animal numbers may need to decrease), the process needs to be a much more “case management”-style approach, additional dollars may be required to make infrastructure changes, and the personal risks to the farmer can be much higher. In a transition situation for an existing farmer, making a successful change absolutely depends on building trust with a grazing support person.



### 3. “Elephants” in the Farming System

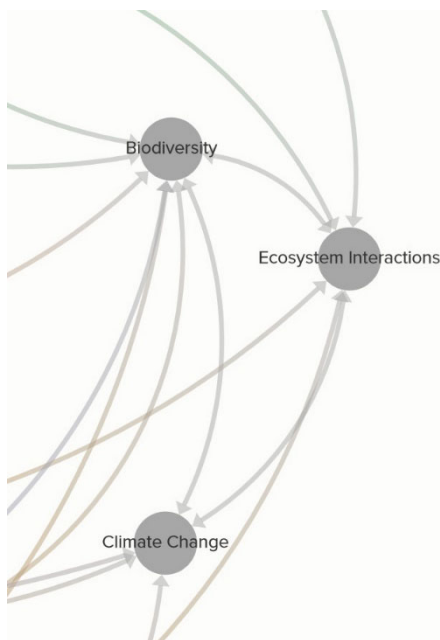


Figure 2 Grand-scale issues like biodiversity, climate change and ecosystem-level interactions have the potential to impact farms at every level.

Figure 1 Understanding of core concepts are the starting place for success, but existing farmers and new graziers have different pathways of support.

While issues such as soil erosion and water quality are tangible and current, much larger crosscutting, whole-system issues affect farms of all types (and are addressed by good grazing management). Some of the greatest predicted impacts of climate change on Vermont include increased swings in weather conditions, bringing greater periods of drought *and* greater and concentrated precipitation events. Having flexible farming systems that can still be productive and successful under highly variable conditions will be essential to future farm success.

Biodiversity extends to all biological life above and within the soil; greater biodiversity in systems has been shown to create greater stability overall. Recent studies by USDA researchers has shown a direct relationship between reduced biodiversity and greater pest pressures, consequently a higher use of pesticides/insecticides.

Finally, a farm ecosystem is subject to the impacts of the larger ecosystem(s) around it. Rising water tables, Lyme disease, and increased pressure from invasive species are just several examples of how checks and balances in larger ecosystems affect the day-to-day challenges and management decisions faced by farmers. Grass-based farming, when managed well, works in concert with natural systems, instead of spending energy, dollars or effort struggling against them.

## What's Our Vision for Grazing in Vermont?

- A highly diverse livestock farming system; diverse in size/scale, livestock type, and market.
- Increased use of well-managed grazing by medium and large farms.
- Improved grazing systems on every existing grass-based farm.
- Consistent, high-quality products available to Vermont and Northeast region customers, sold at viable prices for farm business success, farmer quality of life, and the health of local consumers.
- Increased public understanding of the benefits of, and support (via purchase and policy) of, well-managed grazing farms.
- Smooth transition of livestock farms and grazing management skills from one generation of farmers to the next (maintain vibrant agricultural community and history)
- Mechanisms to reward beneficial land management outside of direct product sales (i.e. monetary valuation of ecosystem services provided by well-managed systems).
- A thriving, biologically active working landscape as a core driver for Vermont's economic development.

## What Existing or New Activities Contribute to this Vision?

- Proactive statewide partnerships to improve understanding and appreciation of livestock as tools to achieve Vermont's goals.
- High quality, consistent and coordinated education, research and technical assistance, including intensive workshop series, learning journeys, farmer exchanges, farmer-to-farmer mentoring support, start-up grant/loan programs for beginning livestock farmers (particularly in the areas of beef production and for women farmers).
- "Case management" technical assistance for farms transitioning from a non-grazing/continuous-grazing system.
- Expanded beginning farmer education, including multi-part courses for grazing planning.
- Market education/pull through for consumers to understand the value of Vermont grass-fed, and increase demand (an opportunity for Extension to strengthen/develop outside partnerships).
- Expanded on-farm research projects assessing environmental impacts and value of grass-based farming, capturing product quality under different systems, and contributing to the knowledge of grazing systems needed by experienced farmers to continue to improve management.
- Facilitation of on-farm events, and regional farm discussion and goal-setting groups.
- Research topics:
  - General Adoption and Planning*

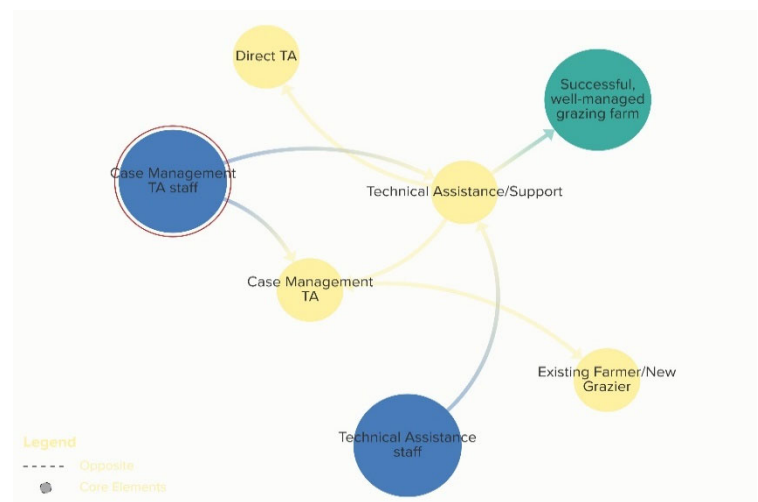
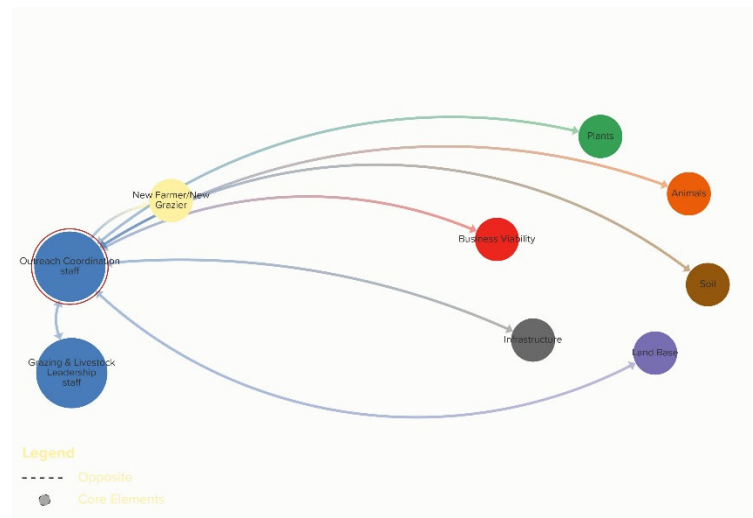


Figure 5 Addressing the different technical assistance needs between different farmer situations is critical to both adopting beneficial practices and starting fresh with them.

- Assess grazing adoption and current practices by new/transitioning farmers.
- Use GIS mapping capabilities to evaluate grazing practices and achievements among farms/regions.

#### Soils

- Comparison of greenhouse gas differences between livestock systems (continuous grazing vs. CAFO vs. MIG).
- Grazing and soil fertility monitoring on degraded and/or transitioning grazing lands.
- Edge of field runoff monitoring of grazing farms.

#### Pastures

- Pasture improvement monitoring on degraded lands.
- Grazing multiple cover-crop mixes to extend grazing season and mitigate the summer slump.
- Forages and management for grass-finished beef and grass-milk dairy.
- Strategies for pasture season extension and hay use minimization.

#### Animal Husbandry

- Study the scale in which dairies can be profitable with grazing.
- Effects of shelter access on animal performance.
- Effect of different finishing forages in animal lipid (fatty acids) profile.

#### Ecosystems

- Pasture response to restored soil ecosystem function.
- A Vermont ecosystem services valuation provided by well-managed systems to estimate potential farmer's rewards.
- Quantify how well-managed grazing can help mitigate climate change.
- Quantify how well-managed grazing can help improve water quality.

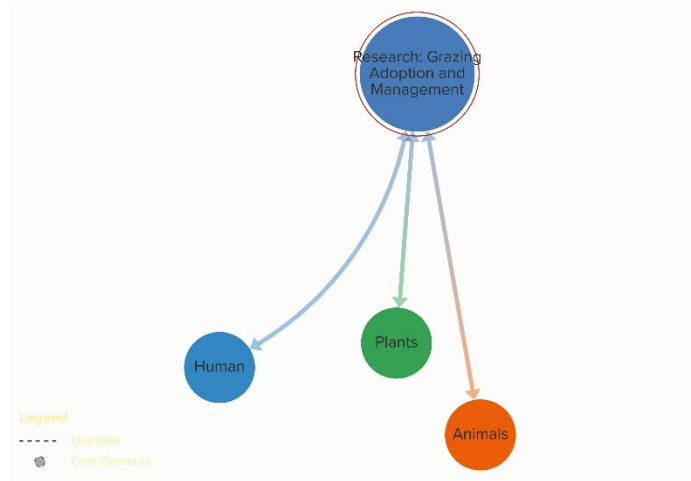


Figure 6 Adoption on every livestock farm is our ultimate goal.

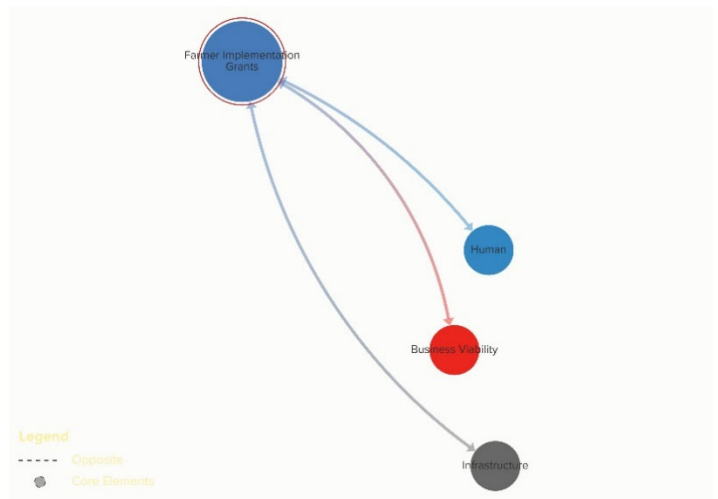
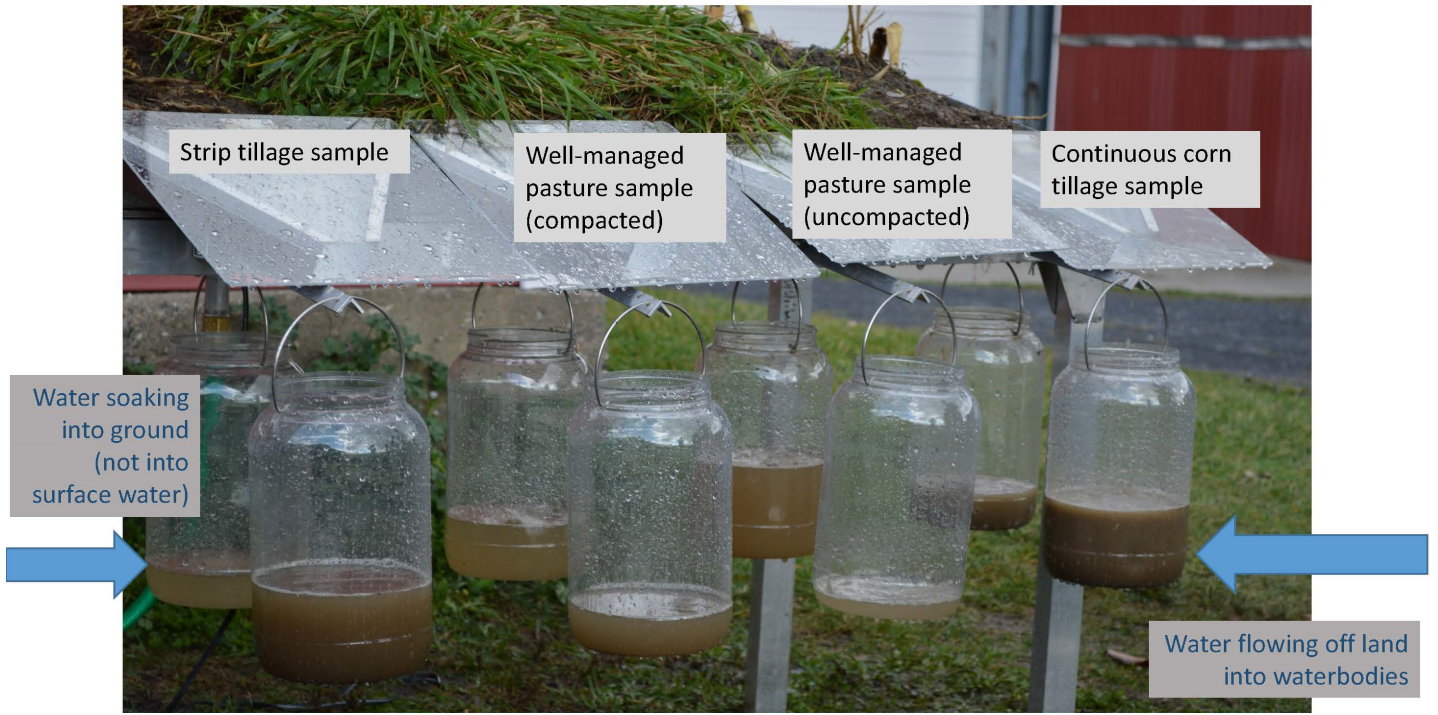


Figure 7 Farmers need help, especially small farmers.

# The Value of Pasture in One Slide: Rainfall Simulation



Regardless of where we are working, or the soils, or the waterways, the results from this slide represent a universal: building soil health protects water. Soil health is built by 1) keeping the soil covered, 2) minimizing soil disturbance, 3) maintaining living roots, and 4) encouraging diversity of plants (and microbes).

The buckets in the front row catch water that runs off land; the buckets in the back row catch water that passes through the soil. As we can see, the continuous corn (30+ years), tillage system not only has the largest quantity of runoff, but it also has the most sedimented water. The low-compaction pasture sample has the cleanest water, and allows the most water to soak through the soil, where it can be used by plants, holds nutrients, and continues the cycle of soil health.