

farm ^{to} plate

NETWORK

DEEP-DIVE SESSIONS

3. There's No Denying It: Climate Change and Vermont's Food System

Scientific consensus predicts that climate change will have detrimental effects on most crops, livestock, and ecosystems. How are Vermont farmers and food system businesses preparing for the effects of climate change on their operations? What types of risks are of greatest concern? What innovative approaches could farms and food businesses employ to adapt to a changing climate? How are producers addressing possible changes in markets as a result of climate change and what are they doing to make their operations more resilient? This session will explore these questions. Begins with brief presentation on climate change and Vermont's food system.

Facilitator: Rachel Schattman, [UVM Agroecology & Rural Livelihoods Group](#)

Panelists:

Kara Fitzgerald, [Evening Song Farm](#)

Abe Collins, Collins Grazing

Emma Marvin, [Butternut Mountain Farm](#)

Brian Donahue, [Brandeis University](#)

Marli Rupe, [Vermont Agency of Natural Resources](#)

This session should be of interest to members of the [Energy Cross-Cutting Team](#), the [Soil & Water Cross-Cutting Team](#), the [Technical Assistance for Producers & Processors Working Group](#), the [Farmland Access & Stewardship Working Group](#) and the [Food Safety Task Force](#).

Session began with a presentation, *Climate Change and Vermont's Food System*, by Scott Sawyer (VSJF). **The powerpoint slides are available in the google docs folder.**

Panelists:

What is your business type or what businesses do you work with? What are the biggest risks? How does your business or others prepare for climate change?

Kara—We lost our farm in Cuttingsville to Tropical Storm Irene. We still feel like we're days after the storm. We are vegetable growers for 100 families. The storm changed how they think about climate change. Water and wind concerns have been acerbated. Moved farm to steeper hillside. Changed tillage practices and put in more big strips of perennials to manage erosion events. Watched big rain events in past two years at new location. Tried to manipulate water: try to keep things covered. Two well systems and backup system and always thinking about how to capture water. Previous farm was dairy farm and their dairy barn blew over.

Emma—Butternut Mountain Farm is a long-standing business that buys syrup and sells in bulk or repackages. Today the core of their business is processing a significant amount of the maple syrup produced in Vermont (e.g. up to 40%). Climate change is something that's very significant to us. We're harvesting a product from wild grown trees. They take 40 years to grow. We have a single ingredient product that is only produced in 17 states and provinces.

Two factors for concern: productivity of resource and health of trees. Sap flows under specific conditions. A few degrees change makes a big impact. Many stresses impacting the trees: fungus, bugs, temperatures, acid rain, and invasive species. Will Vermont be at the southern end of sugar maple range? Effort has been to invest in new technologies (check valve spouts, vacuum systems).

Marli—The Farmers I tend to work with are dairy farmers. The risks I see are more and intense rainfall. ANR is trying to balance education and regulation. Get a lot of feedback from general public about how agriculture is causing so much of Lake Champlain pollution.

We're trying to mitigate risk proactively: where is the land? What are the potential impacts of water on the land? We have a lot of data that can help us understand our rivers. We have a lot of mapping and data. Encourage land owners to look at those projects/programs:

Department of Environmental Conservation: Watershed Management Division: www.vtwaterquality.org/

Vermont Natural Resources Atlas: <http://anrmaps.vermont.gov/websites/anra/>

How do we manage risk? Emphasize the importance of soil health. Cover cropping, larger buffers, woody buffers, reduced tillage and no-till practices. Stopping erosion.

Helping farmers understand that water quality and environmental issues need to be part of the business.

Abe—I'm a cattle grazer. I monitor, assess, design, and then build infrastructure. Infrastructure looks like fencing, etc., but the core is really soil. Build soil through grazing and cropping systems. Monitoring soils in ways that have never been done before.

Smart Lake initiative on Lake George. Need smart watersheds. See, for example, <http://grist.org/climate-energy/whats-wrong-with-gorgeous-lake-george-scientists-wire-it-up-to-find-out/>

Need soils to infiltrate raindrops where they land. Payment for environmental services schemes: how to develop? How to pay farmers for the full range of services they offer? Need soil like chocolate cake. Need soil with available nutrients. Need to establish baselines for soil health. Need soil monitoring systems.

Brian—If we convert forest land to agricultural land in the way that Abe mentions, that is what will make the regional vision work..

In the 1970s in Boston we would never put out tomatoes before Labor Day. Today you can put out tomatoes at the beginning of May. Used to be getting through September was a miracle. Now getting through October is common. Hang maple buckets in January, that's very early. High cost of grain will drive advantages of grass and lower meat consumption.

Any optimism I feel comes from the low emission trajectory, which has us becoming more like West Virginia. High emission trajectory, which has us becoming more like Georgia = all bets are off. A vision of agriculture that conserves energy and carbon.

Q+A

Jeff—Who can people turn to for assistance on pest issues?

Emma—relatively pleased with response to pests in Northern Forest so far. Biggest impact can be on education (especially Asian long-horned beetle). Don't move firewood from one place to another. Forest tent caterpillar is an

emerging threat.

Marli—UVM Extension system has resources: <http://www.uvm.edu/albeetle/>

Sam Smith (Intervale)—Need to build in climate change to all things that the F2P Network does. In my work with farmers, climate change has been impacting so many farmers. We have to make climate change endemic to the way we do business. **At Intervale we now think about the fact that every three years people are going to lose ½ of their crop.** State government has not done a good job at demonstrating the economic value of some of these practices. Places that were hit by Irene that were grazed came back more quickly.

Need to transition dairy industry over to grazing.

Marli—nutrient management will save you money by doing x. Need to incentivize and provide \$ figures to clients.

Kim Hagen—need to have more flexibility around practices (e.g., we don't allow grazing in certain areas but we have found that edge grazing can be beneficial)

Peg Elmer—need to be very nimble re: warm and cool temperatures, dry and wet plants, forest fires.

Tom Kelly (UNH)—Need to accept high emission scenario for Farm to Plate and need to recalibrate notion of reality for decades ahead. Should internalize that more concretely.

Do away with duality of adaptation and mitigation. Emphasize connections between.

A lot of the discussion is micro economic, but the problems are structural. How to balance this conversation? This reinforces the notion of networks.

Jennifer Wilhelm—Europe is ahead with emphasizing multi-functional Ag. Diversified ag: flood mitigation, carbon sequestration.

Performance based systems, rather than practice based. For example, not BMPs and organic certification, but the results through monitoring.

See, for example:

X. Morvan et al., "Soil Monitoring in Europe: A Review of Existing Systems and Requirements for Harmonisation," *Science of the Total Environment*, 391 (2008): 1-12, <http://library.certh.gr/libfiles/PDF/GEN-PAPYR-3267-SOIL-MONITORING-by-LE-BAS-in-SCI-OF-THE-TOT-ENV-V-391-ISS-1-PP-1-12-Y-2008.pdf>.

Pat—Amend soils as part of stormwater plans. Compost increases resilience of roadside banks. Ag needs to go to development community as part of joint management program. Stormwater management rules have been rewritten.

Some of the solution is beyond the Ag community: we need to reach out.

Sam—How to transition dairy sector?

Jeff Roberts—how do consumers fit into all of this?

Farm to Plate has not energized or engaged the public.

Revisiting dairy question? How is that being addressed in Farm to Plate?

Answer—Diplomatically.

Emma—it's a commodity, as with maple. Other parts of Farm to Plate are more consumer focused.

Mike—Focus on high emissions scenario. Need to think more about where we live. After Irene, we had all these conversations about the valley floor. But there are any number of other problems (e.g., long driveways)

Diane—health protection needs to also be valued.

Jeff—Disease transmission from bugs to animals to humans.

Abe—If a problem seems unsolvable, expand the problem.

Mike—Planning has to be long term.

Takeaway Messages:

- 🍷 Adopt health perspective (related to climate change)
- 🍷 Consumer education and consumer informing policy
- 🍷 Support monitoring efforts and performance-based, not practice-based
- 🍷 Holistic landscape view
- 🍷 Forest, landscape, watershed
- 🍷 Payment for ecosystem services
- 🍷 Adapt high emission scenario for F2P
- 🍷 Engage dairy community - what's already happening to engage the dairy community? What makes sense for engaging this group?
- 🍷 Flexibility - regulations, more integration of ecosystem services
- 🍷 Drought resistance and flood resiliency
- 🍷 Awareness and planning for extreme weather events - grant or loan program
- 🍷 Explore a carbon tax
- 🍷 Case study examples of adaptation, mitigation, etc.
- 🍷 Valuation of ecosystem services, integrated into F2P Forest and Farmland
- 🍷 Investment in research and technical support

- 🍏 Long-term planning is a must

Takeaway Messages:

- 🍏 **Develop new Farm to Plate document: Climate Change and Vermont's Food System.**
- 🍏 **Understand and inventory existing programs that may aid in mitigation and adaptation.**
- 🍏 **Develop case studies of mitigation and adaptation (e.g., payment for ecosystem services).**
- 🍏 **Connect food system people to larger network of people (Resilient VT, education, ANR, Department of Health) in Vermont talking about climate change.**

Additional Resources:

Vermont Food System Atlas Collection—Climate Change and Vermont's Food System:

<http://www.vtfoodatlas.com/collection/51e6f4f489b464-72132890>

Justin Gillis, "Climate Change Seen Posing Risk to Food Supplies, *The New York Times*, November 1, 2013,

www.nytimes.com/2013/11/02/science/earth/science-panel-warns-of-risks-to-food-supply-from-climate-change.html?_r=0.