

Ecosystem Services in Working Lands Practice and Policy of the U.S. Northeast:
Successes, Challenges, and Opportunities for Producers and Extension

Dr. Mario Reinaldo Machado
Presentation to Vermont Senate and House of Representatives
February 21st, 2023

Members of the House/Senate, it is an honor to be here today to present some of my research on improving ecosystem services and farm viability in the US Northeast and in Vermont. I would like to start by thanking you all, as well as Rural Vermont, for inviting me here. As mentioned, my name is Dr. Mario Reinaldo Machado and I am currently a postdoctoral researcher at the Gund Institute for Environment at the University of Vermont. My research generally focuses on the social and economic dynamics of payments for ecosystem service programs, which are programs that provide incentives to farmers and landowners for the production of ecosystem services on their land. Ecosystem services are the many benefits to humans provided by the natural environment, such as clean air and water, soil and food production, and biodiversity, among others. Programs to incentivize their production can play important roles in supporting agricultural communities and rural landscapes, especially as they confront the multiple challenges posed by shifting economic dynamics and climate change, both of which undermine the capacity of farms to remain viable, adopt more sustainable practices, and contribute to both the local food system and local economy. In this sense, these programs can also be of importance to all of us, as agriculture and other working lands support vital ecological functions that all of us rely upon.

Today I would like to discuss a report I recently published along with my colleague, Dr. Alicia Coleman at the University of Connecticut. This report entitled Ecosystem Services in Working Lands Practice and Policy of the U.S. Northeast, summarizes work we completed for the Extension Foundation reviewing over 1,300 federal, regional, and state programs available to farmers and working lands managers across the US Northeast, including Vermont. The point of this extensive research mandate was four-fold:

- First, we aimed to understand how these programs might increase farm profitability and sustainability.
- Second, we wanted to know how these programs might position agriculture as a primary leader in mitigating climate change.
- Third, we wanted to understand how these programs might build the resiliency of rural and urban communities.
- And fourth, we wanted to know how these programs might increase the appeal of agricultural professions to a wide range of young people.

After completing this research, we discovered a number of important trends in current ecosystem services programming.

- First, programs make use of several different incentives, from direct payments to tax abatements to free educational programming. To be successful, however, programs must provide incentives that meaningfully offset the risks farmers and landowners assume and the labor they expend by participating in these programs. For example, programs that provide direct payments and technical support not just for program implementation, but for application submissions and data collection as well may be more successful in recruiting farms over programs that only provide technical assistance or those that only fund program implementation.
- Second, programs are either structured to address single ecosystem services or multiple ecosystem services at the same time. There are strengths and weaknesses to both approaches. Programs that target single ecosystem services, for example, may have more impact and be more accessible to farms with larger acreage. Programs that target multiple ecosystem services may have more impact on smaller farms. These trade-offs and dynamics need to be considered in program design.
- Third, there are very few programs currently that address challenges around resilience directly and even fewer address resilience beyond the farm scale. Programs focused on resilience, especially as it functions across scales, from households to communities to the state and to broader regions, as well as between urban and rural areas, represent an important direction for future research and programming.
- Fourth, while there are a number of programs for young and beginner farmers, these incentives may not be enough. Programs that couple ecosystem service provisioning with incentives that directly support livelihoods, such as direct payments, basic income, land access/acquisition, free education/professional development, childcare and health care, may help.

Taken together, these findings point to another crucial lesson emerging from our research. The most successful programs in our assessment were those that treated agricultural landscapes as multifunctional, that is to say a system of essential social, economic and ecological functions which operate across scales, from the local to the global, and across time, from this generation to the next. What this means, in essence, is that to address contemporary social, economic and ecological challenges, planning and programming needs to think more holistically about how working lands, including farms and farming households, contribute to the communities and landscapes that we rely on and that we call home.

To date, Vermont has been a regional and national leader in pioneering forward-thinking programs to serve rural farms and rural communities, who in turn serve the public good. There is, however, important work that still needs to be done.

The testimonials you will here

Commented [1]: At Rural VT we think so as well and will also facilitate a Citizen Action Day focusing on care this session (date TBD)

Commented [2]: Maybe an example would help to explain this framework more (since this is such a critical piece)

Commented [3]: The time might be tight but feel free to share your recommendations with the committees as well. If you like, also in consideration of the shortfalls and ideas our small farmer cohort might be talking about. With this event we're not necessarily pushing for a specific bill that we want to get through this session. This is an opportunity to educate these lawmakers on the big picture and grand scheme of things and the potential scope and relevance of this work around improving programs. FYI Rep. Suprenant and Graham have been suggesting a new program to transition and diversify farms with 250K funding

Commented [4]: @caroline@ruralvermont.org

Would you be able to provide a bit more detail about what the farmer/Rural Vermont testimony will entail?

Commented [5]: Hi Mario - here is a quick reply to your question. I just shared with you the link to our lineup so far with some additional farmer testimonials TBD on Monday because the RSVP is still ongoing. Here's links to the Rural VT website to a recent panel where Julie and I participated in that I will reference at the event to check out: <https://www.ruralvermont.org/from-the-field-blog/2023/1/25/gqker2qy85ntzdzdixeu8dtk85ox10> Julie will be presenting very similarly I think at the event, I will talk a lot about this document with legislative recommendations from our Small Farmer Cohort: https://docs.google.com/document/d/1iRRmtUVA9nPIefnf8ecnF1SxVC1vedjVeNxEU_5mfM/edit

I hope this might provide some good idea of the context.

- Caroline

Commented [6]: It will be so great to hear from you and I'm still sorry that the PES WG didn't pay closer attention to your great work in this field.