

production land to cover cropped land to an impressive 1:1. This demonstrates that farmers, no matter where they come from, no matter

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

	Please reference our FY21 POW (alternatively you may refer to FY20).
	See above.
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See above.

UVM Extension stakeholders told us how important it would be to recognize the stacked benefits from well-managed farmland and

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

		<p>Relevance: Regulations aim for safe food, good working conditions, and clean water. Despite good intentions, regulations don't make sense in every situation, and they cost farmers their time and money, which seems to threaten what we all want: a vibrant agriculture. This is the story of how Vermont's vegetable farmers ignored their headaches, weeded out the bad stuff, and cultivated a positive, practical approach to food safety regulation.</p> <p>Response: In 2014, responding to the pending Produce Safety Rule being developed by the U.S. Food and Drug Administration (FDA), the Vermont Vegetable and Berry Growers Association (VVBGA) teamed up with University of Vermont Extension and the Vermont Agency of Agriculture, Food and Markets (VAAFMM) to get out in front of this regulation. Our goal was to create a user-friendly program to help farms of all sizes maintain market credibility and reduce produce safety risks, while reaping the benefits of becoming "more organized." Out of this collaboration the Community Accreditation for</p>	

useful. These include things like testing the water used to wash crops, training employees on sanitation, and developing standard procedures for cleaning harvest and storage equipment. CAPS is not a regulatory program, though it can help farms comply with regulations.

Results: Participation in CAPS has increased every year, from 60 farms in 2016, to 113 farms in 2018. Most CAPS farms are in Vermont, but some are in New Hampshire, New York and Quebec. A few farms use the CAPS platform but choose not to get accredited. Over 90% of CAPS farms renew from year to year. In total, CAPS farms currently have 1,600 acres in production and sell about \$23 million of produce annually. Twenty of these farms are also enrolled in CAPS-Plus. Earning a CAPS-Plus certificate is optional for farms that want to market their produce to larger buyers, some of whom, like Hannaford Supermarket, accept it in place of a USDA Good Agricultural Practices (GAPS) audit. CAPS-Plus has increased the number of Vermont farms selling to Hannaford by over 50%, with 30 certificates granted since 2016.

CAPS is helping Vermont's growers adapt to new expectations of buyers and regulators. The program is effective because it was designed by vegetable farmers to make sense and because it provides multiple benefits, on the ground, every day. As the national produce safety landscape evolves, CAPS will evolve, too - changing as Vermont's growers, educators, and regulators collaboratively find ways to better "harmonize" with new market expectations and the twists and turns of FDA's Produce Safety Rule implementation.

		<p>Relevance: Hilda Fisk Haines and Steve Haines operate Fisk-Haines Farm in Danby, Vermont. They milk 80 Holsteins, ship milk through Dairy Farmers of America, and manage approximately 250 acres. Six years ago they were experimenting with rotational grazing on 20 acres and turned to UVM Extension Grazing Specialist Cheryl Cesario for guidance. Looking back, Hilda says, "I did not understand the logistics. I was doing it on a wing and a prayer."</p> <p>Response: Hilda began meeting annually with Cheryl. Before the 2018 grazing season began, Hilda participated in UVM Extension's four-part grazing class where farmers learned in-depth grazing principles and developed their own plans. This program was part of a two-year Sustainable Agriculture and Research Education grant that combines classroom education with on-site consulting visits. "In the pasture class I picked up stuff that made a difference this year," says Hilda.</p> <p>Results: By 2018, their grazing system covered 60 acres and their season savings totaled \$44,000. These savings were thanks to the 36,400 pounds of grain, corn silage and haylage their cows no longer needed each week. Instead, cows ate approximately 63% of their daily dry matter needs in the pasture over a 24-week period. Milk production remained steady, averaging 70 pounds per cow per day. Hilda's daily attention to plants and animals has been critical to success, allowing increased recovery time for pastures to grow back and increase dry matter yields. The annual vet bill was reduced by 66%, too. "Our animals are healthier. They breed back better, their feet are stronger. Improvements to their system, like adding polywire fencing and a water system, are done regularly and without cost-</p>	<p>Global Food Security & Hunger</p>
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		share money. Their motivation? "It's simple," Hilda says. "Money. This is the cheapest milk I've ever made."	
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Response: During fall 2018, in partnership with the Association of Africans

		<p>Results: Several presentations to maple producer groups were conducted in Minnesota, Michigan, New York, Vermont, and Connecticut. These educational presentations included portions of the results found to date, though several years of work are necessary to incorporate natural season-to-season variation to formulate the final tapping guidelines.</p>	
		<p>Relevance: The Required Agricultural Practices require farmers create nutrient management plans (NMPs) and keep records of their manure and fertilizer applications to assess potential pollution risk. UVM Extension agronomic and soil specialist Heather Darby originally developed the "goCrop" software in 2012 to help dairy and other livestock farmers develop, implement and maintain their NMPs. Farmers are interested in additional tools to increase on-farm nutrient use efficiency and decrease nutrient imports, thus maximizing cost savings and environmental benefits.</p> <p>Response: With new funding, Darby and her team developed two new analysis tools for goCrop: the "Whole Farm Mass Nutrient Balance Calculator" and the "Cover Crop Economics Calculator." Unlike the NMP, the Whole Farm Mass Nutrient Balance Calculator (based on Cornell University's model) looks at how nutrients move onto and off the entire farm. It tracks nutrients in the forms of imported or exported feed, fertilizer applied, bought or sold animals, and amount of milk sold. In Vermont, this tool can be used to assess if a farm is a net importer or exporter of phosphorus. Cover crops can increase organic matter, increase nutrient availability to crops, and reduce erosion. As a result of soil health improvements, cover crops can protect water quality and increase cash</p>	<p>Global Food Security & Hunger</p>

		<p>crop yield. Of course, there are also costs due to planting, maintenance, and termination. The Cover Crops Economics Calculator takes these into account during the length of a field's rotation to assess if cover crops have a net monetary gain or loss.</p> <p>Results: Livestock farmers in the northern Lake Champlain Basin have piloted the new features to ensure their effectiveness. Tim Magnant of Bridgeman View Farm was highly engaged in the process. A final report from the Whole Farm Mass Nutrient Balance Calculator showed him the tons of nitrogen, phosphorus, and potassium by exports of milk, animals, and crops and by imports of feed, fertilizer, animals, and miscellaneous items like bedding. Tim was surprised to see that the majority of phosphorus actually came onto his farm as feed, not fertilizer. "It taught me things I wanted to know about how things work. I never thought about grain and phosphorus in milk. I thought it was all about the fertilizer." This sentiment was also shared by Geoff Sweeney of Sweeney Farm who said, "I had not thought of grain as an importer of phosphorus...after using this tool, I talked to the feed guy about over mineralization of the animals. They just don't need all of it." Recognizing that feed is a main source of bringing phosphorus onto the farm and that dairy animals often get more phosphorus than they need, can encourage farmers to source lower phosphorus feed options. The Cover Crops Economics Calculator also provided Tim Magnant with useful data and confirmed what he was seeing on the ground: his soils are healthier to the point where he may not apply starter fertilizer to his corn next year. The benefits of cover crops and the new tool were echoed by Mike Ferris of Ferris Farm, "the Cover Crops Economics Calculator helped me realize the monetary value and savings of planting cover crops." Mike is looking forward to using the tool at next</p>	
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	year's NMP update class to run scenarios to pinpoint the most cost effect cover crop system for his 2020 cover cropping plan.	
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Relevance: Resources for Produce Safety and Preventive Controls for Human Food are rapidly being developed by stakeholders across the nation. Given the breadth of material being developed, it is impossible to know what materials are created and where they can be found. The scattered nature of these materials makes it very difficult for anyone to fully understand what educational and technical support information exists, resulting in duplication of efforts.

	<p>Results: As a direct result of the technical assistance provided to 81 farmers this past year, the UVM Extension Crop, Soil and Pasture Team increased on-farm implementation of conservation practices on 9,179 acres (average 1.6 practices per farm). Implemented practices included the following: nutrient management plans, innovative manure application, conservation tillage (primarily no-till planting), cover crops, improved pasture/grazing management systems, and more.</p>	
	<p>Relevance: Both maple sap/syrup and timber harvesting represent viable working lands business opportunities in a state that is roughly 76% forested. But in early 2017, softwood and secondary hardwood markets were experiencing challenges that concerned business owners. Also in 2017, the maple industry was continuing to grow, but anticipated reductions in bulk</p>	

accounting, and industry benchmarking; financial cash flow management, projections, and feasibility; financial access to capital; and marketing.

Results: By engaging with current and prospective business owners through a variety of outreach techniques, this project team was able to develop core standardized business analysis methods and disseminate industry benchmarks to guide management decisions. 79% of survey respondents indicated that this project helped owners make a decision for their business. Outcomes also included: five owner-operator s pep 279.05 37

sharing university research about tourism. The conference was a success and VTS became a non-profit seven years later with the mission of hosting an annual conference. In 2019, VTS attracted 242 participants and offered two days of keynote speakers, workshops, and networking opportunities.

Results: Long-term (conditional) outcomes are difficult to measure and directly attribute to a particular program, however annual conferences with repeat participants provide an opportunity to assess long-term outcomes. The Vermont Tourism Summit serves as an example of an annual conference with a high percentage of attendees who have participated in past conferences. This continuity provides an opportunity to ask attendees of past conferences about long-term outcomes. In 2019, 69% of participants had attended the conference previously. The evaluation included a question asking whether past conferences had helped attendees make improvements in a variety of areas. Of the 65

effects of this crisis are felt in every sector from business to education to social services and vulnerable populations, like youth, are at especially high risk.

Relevance: Youth benefit from positive role models and safe, supportive environments when building key life and job skills. Andrew Dutil has been passionate about "Roblox," an online community where users create and collectively play games, since age eight. Now a senior studying computer science and programming at Burlington Technical Center (BTC), Andrew turned that passion into a unique learning opportunity.

Response: Through partnership between BTC, UVM Extension's 4-H Program and his sending school, Andrew developed an after-school Roblox class. With team mentoring and guidance, he created four 90-minute lessons to teach younger students how to code, design and build robots in the system. The course received high marks from its participants: "If this were at my school, it would be the best class I ever took!"

Results: Andrew lives his life navigating the complexities of autism, and has had difficulty sharing what he loves and excels at with others. With the support of his schools and the opportunity 4-H provided, Andrew found

		<p>planning toolkit to help support all Vermont communities in sustainable, forest-based recreation planning in town forests.</p>	
		<p>Relevance: Vermont cities and towns are being challenged to find ways to address climate change in their communities. For some, this means improving the energy efficiency of town buildings (e.g. town halls, libraries, schools, etc.) and in some cases this work translates into educating community members on how to reduce their carbon footprint and/or how to save money on energy in their personal lives.</p> <p>Response: For 11 years, UVM Extension has partnered with the Vermont Energy and Climate Action Network to offer a yearly one-day conference for citizens interested in reducing energy consumption and/or addressing the impacts of climate change. The event attracts between 225 and 300 individuals from around the state and a handful from surrounding states. Speakers come from the communities themselves and from various NGOs around the state. UVM Extension and VNRC do the bulk of the coordination of the event managing the logistics, registration, recruiting sponsors and managing evaluations.</p> <p>Results: We now have over 100 communities in Vermont with Energy Committees. These committees have conducted energy audits on their town buildings, written grants of varying sizes to support infrastructure ranging from solar arrays to electric vehicle charging stations to recycling initiatives and rural transportation projects. They also conduct town meetings and public education events to help community members better understand both the complex challenges and opportunities the state faces in this time of changing climate.</p>	<p>Community Development and the Personal and Intellectual Development of Youth and Adults; Climate Change</p>

		<p>In addition, these committees are developing the leadership skills to sustain their committees over time and to more fully integrate them into the local government structures of their towns/regions. Almost half of the conference attendees have attended five or more conferences. We count this as evidence that they value the conference and the information provided.</p>	
		<p>Relevance: Winter feeding of grazing cattle in cold, humid climates like the Northeast can lead to loss of soil, water quality degradation, and damage to pastures. With climate change resulting in muddier springs and falls, farmers are looking for solutions that are cost effective for protecting both environment and pastures. Joshua Faulkner, UVM Extension Research Assistant Professor and Farming and Climate Change Program Coordinator, offers an innovative option.</p> <p>Response: Faulkner introduced Vermont to its first woodchip heavy-use area in 2016. Designed for use on small to medium farms, the woodchip system reduces pasture damage, increases comfort and performance of cows, and keeps dirty water out of streams and waterways. Faulkner's research shows that this results in up to a 50% reduction in water runoff. And the water that does run off is cleaner, too. This reduces the infrastructure, labor, and space required to handle and/or treat this water.</p> <p>Results: There are now six systems in Vermont and New Hampshire with more on the way. Farmers report comfortable animals, and reduced wastewater production and implementation costs. These results led the Natural Resources Conservation Service (NRCS) and the Vermont Agency</p>	<p>Climate Change</p>

2019 Annual Report of Accomplishments and Results (AREERA)

		<p>Response: Studies are being done to determine if the addition of cooking classes to the standard behavioral weight loss program will improve weight loss and diet quality.</p> <p>Results: Research is ongoing, but indicates that cooking may be an important behavior to encourage people to promote health.</p>	
		<p>Relevance: The stability of the Vermont dairy industry depends on immigrants who work an average of 69 hours per week in a physically demanding job. Barriers like language, lack of transportation and fear of lost income delay workers from receiving care, resulting in more significant health problems, decreased productivity, and increased work absenteeism.</p> <p>Response: The statewide Bridges to Health (BTH) program, a collaboration among UVM Extension, Bi-State Primary Care Association, the Open Door Clinic and Vermont Care Network, is the only health care support system in Vermont for immigrant farmworkers. Outreach to workers on local farms helps them communicate emergent, urgent and preventative care needs to employers and receive timely, affordable care -- in their local communities and native language. In 2018, BTH coordinated nearly 1,700 in-clinic and on farm health appointments for farmworkers in all 14 Vermont counties.</p> <p>Results: BTH's coordination and support allowed 450 immigrant farmworkers/family members to gain access to health care services at over 90 health sites. This assistance allowed farmworkers to maintain physical, mental, and emotional health. For employers, avoiding costs of health-</p>	<p>Childhood Obesity</p>

