Vermont (University of Vermont)

Plan of Work for 2023-2027

Status: Final (Approved 9/28/2022)

Executive Summary Overview

The College of Agriculture and Life Sciences (CALS) at the University of Vermont is a nationally recognized, dynamic community of accomplished scientists and intellectually driven scholars. As the only research university in the state, and as a land-grant institution, we are charged with integrating higher education, research, and Extension to meet the needs of Vermont citizens, communities, and organizations. We accomplish this with research conducted through the Vermont Agricultural Experiment Station (AES) and research-based education provided by UVM Extension (EXT) faculty and staff. Both AES and EXT are housed within CALS. Together, we work to protect and enhance a quality of life characterized by a healthy natural environment, vibrant economy, strong sense of community, capable and resilient citizens, and a deep connection to agriculture and food systems.

Vermont remains a largely rural state and is seventy-eight percent forested (fpr.vermont.gov). With one metropolitan and three micropolitan areas, sixty-five percent of our estimated 645,570 residents live in rural Vermont (USDA-ERS). Our population is also one of the oldest in the nation, with 19.4% aged 65 years and older (3.4% higher than the national percentage) and an average age of 42.8 (data.census.gov). For all Vermont households, earning a livable wage is associated with better health, adequate housing, and food security. However, rural residents face additional challenges including geographic isolation, dependence on agriculture, and fewer opportunities for employment. Consequently, rural community development is a priority for the state, and our aging population requires us to adapt to changing demographics. We must develop the means to address workforce development, land access (particularly to women and minorities), and agricultural diversification.

Agriculture and forestry are at the heart of Vermont's economy, culture, and heritage. Our commitment to quality, integrity, and sustainability has brought the state national fame in many agricultural sectors, and the Vermont brand is respected across the food and forestry industries. Vermont produces more than fifty percent of the country's maple syrup, and agricultural sales (including dairy) surpass all other New England states (nass.usda.gov). Our farms accomplish this using just one-fifth of Vermont's land (Ibid). Farmer's markets, community-supported agriculture, farm to school programs, and high overall local food purchases make us a leader in the local-food movement. With more organic farms per-capita than any other state, and high adoption of other regenerative agricultural practices, Vermont is a model for sustainable agriculture and food systems.

The quality of Vermont's natural environment is critical to the health of key industries, like maple and tourism, associated with the state's identity. These natural resources require sustainable management and the support of Vermonters informed about the issues. Additionally, the impacts of climate change directly affect the welfare, public health, and financial well-being of Vermonters. Attention to long-term solutions, grounded in research and education about climate change adaptation and mitigation, will lead to greater security for all the state's residents.

The CALS mission of research-based service and educational outreach focuses on contemporary problems, needs, and challenges of a changing state and world. Our efforts support industries associated with the working landscape, from food systems supply chains to the recreation economy, including conservation, preservation, and ecosystem services. From economic development to environmental protection, we follow the needs of our communities and stakeholders and rely on the expertise of our faculty and staff to meet them. We have therefore identified seven areas within which we conduct our transdisciplinary work: Animal Health, Production, and Products; Development and Sustainability of Communities; Foundational and Exploratory Research in Agriculture; Nutritional Value, Food Security, and Food Safety; Quality of the Natural Environment; Resilience of Families and Individuals; and Sustainability of Vermont Agriculture, Food and Forests.

AES and EXT address these critical issues facing Vermont by conducting research, providing technical assistance, and disseminating essential current science-based information to a broad range of audiences. This increases their knowledge and skills and encourages implementation of cost-effective, environmentally sound sustainable practices.

Merit and Scientific Peer Review Processes

Hatch and Hatch-Multistate projects give the Vermont Agricultural Experiment Station (AES) seed funding to enable researchers to pursue research and to apply for additional funding. A call for Hatch/Multistate proposals is issued in January and proposals are due the last week of April. A Hatch Committee is charged with reviewing the proposals and assessing how the research proposed relates to Vermont's critical issues. The committee is made up of research faculty from each AES unit and scores proposals based on the following criteria: significance of work based on critical issues, scientific and technical feasibility, past progress, and innovation. The committee scores each project based on its merit and prioritizes projects based on project budgets and available funding.

UVM Extension’s purpose is to "cultivate healthy communities." To make progress on the purpose, Extension orients its work towards four Result Areas. These provide organizational focus and direction. A number of limited, time-bound strategies implemented over a three- to five-year period, support each Result Area. When completed, these strategies will make significant progress towards addressing our state’s critical issues. When taken together, this results framework is designed to provide boundaries for decision-making about future investments and effort while remaining flexible enough for Extension to adapt to unforeseen challenges and opportunities.

UVM Extension plans programming and measures success annually through the lens of the Result Areas and has internal processes that increase transparency and participation in decision making. The Director’s Cabinet is an administrative leadership committee that supports human resource, financial, operations and programmatic decision making. The Cabinet is organized to support decisions in the context of aligning Extension’s work with the Result Areas, funding strategy and overall organizational strategy. In addition, Extension faculty and program staff participate in Result Area teams that meet regularly and provide overarching guidance on programmatic direction in support of alignment with the Result Areas.

Stakeholder input: Action Taken to Seek Stakeholder Input

To gain insight from industry leaders, elected officials, students and Vermonters, the Dean of the College of Agriculture and Life Sciences (CALS) appoints an advisory board which provides feedback and advice. Feedback will be sought from citizens through the annual Vermonter Poll, dissemination of research through scholarly and popular outlets. Our applied research is informed by the partners with which we collaborate, including local, regional, and state government and non-governmental organizations.

Many UVM Extension programs have advisory committees of one form or another that provide a sounding board and input on current issues and help prioritize programmatic direction. This advisory function will be added to our Result Area conversations by inviting advisors to serve with each Result Area Team. This input helps in all aspects of programming, including delivery method, outreach, and content. Most events ask participants if the programming met their needs and expectations.

Partnerships with communities, public and private organizations, and businesses are important to reaching and serving clients with appropriate programming. These relationships remain a critical part of identifying needs and gaps for Extension programming and AES research. For these reasons, Extension plans to fill two "Client Relations Manager" positions in the upcoming year to facilitate active engagement with stakeholders at all levels.

Stakeholder input: Methods to Identify Individuals and Groups

The CALS Dean, Associate Dean of Research/Director of AES, and the Director of Extension look at a wide range of expertise when appointing individuals to the CALS Advisory Board. They consider those who have experience in forestry and agriculture supply chains, state legislation, research, finance, and marketing, to name a few. An Extension Advisory committee will soon be a subset of this larger board and will meet a minimum of two times a year.

CALS faculty and staff identify logical external partners who work closely with their programs and areas of research. Extension program participants are engaged in developing future programs through on-site data collection feedback tools. Our "Client Relations Managers," through local (community) engagement, will also provide recommendations for and connections to our stakeholders. The Annual Vermonter Poll obtains "pulse of Vermont" issue areas from a representative sample of 700 Vermont citizens.

In a small state, relationships are critical in accessing key individuals with knowledge of current relevant issues for Vermonters. For example, ongoing and regular participation in the Vermont Agricultural Water Quality Partnership (VAWQP) helps us identify and gain access to key individuals. Monthly meetings with Vermont's network of local and state agricultural leaders, allow us to discuss challenges and potential solutions to problems related to agriculture, natural resources, and other issues related to the Vermont farming and forestry communities.

The UVM Office of Outreach and Engagement is working more closely with EXT and AES to establish greater working relationships with communities and organizations, including the Vermont League of Cities and Towns. This helps us to identify challenges, particularly with a rural audience, that Extension and Research can help address.

Additional stakeholders currently include leaders from USDA Natural Resources Conservation Service, Vermont Agency of Agriculture, Food, and Markets, Vermont Association of Conservation Districts, USDA Rural Development, USDA Farm Service Agency, representatives from all three Congressional offices, and other organizations as available or interested.

Stakeholder input: Methods for Collecting Stakeholder Input

Individuals on the CALS Advisory Board provide information on future trends of agriculture and life sciences. We collect stakeholder input from Vermont citizens using the annual Vermonter Poll, professional stakeholder groups through targeted focus groups, surveys, and networking events. By nature of connections between Extension, AES, and our communities, we capitalize on opportunities to collect stakeholder input that inform our research, outreach, and Extension endeavors.

UVM Extension and AES engage partners and stakeholders at multiple stages in the design and delivery of their research and outreach programs. Stakeholder activities include: facilitating ongoing stakeholder groups (e.g., farmer watershed coalitions); program-level advisory groups; inviting stakeholders to programmatic meetings; conducting surveys and evaluations to assess output and impact; collaborative relationships with individuals at partner organizations.

Stakeholder input: A Statement of How the Input Will Be Considered

We take into account identified trends, issues, and new developments to develop and refine research and education programs that serve the needs of Vermont's economy, environment, and communities. This may result in the pursuit of new research and outreach topics, changes to the content of research and outreach Extension programs, and/or changes to how information is disseminated. These are prioritized and resources are allocated considering AES and Extension expertise and available funding.

Critical Issues

Animal Health, Production, and Products

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Supports research that improves animal production, well-being, and welfare as well as improves animal product utilization. Research areas may include animal diseases, sustainable animal production, animal nutrition and nutritional physiology, animal genome, milk product utilization, animal welfare and biosecurity.

Science Emphasis Area

Sustainable Agricultural Production Systems

Development and Sustainability of Communities

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Focus: Engage with communities to support leadership development, capacity building and diverse voices in decision making.

Vermont is a small state, with an economy historically driven by agriculture. In the 21st century, Vermont finds itself in a difficult spot. It ranks 34th in per capita GDP and ranks second for the oldest population. Most of the state's 251 towns and cities are rural—characterized by geographic isolation, low-density settlement patterns, dependence on agriculture, continued population loss, and, all too often, economic distress. These communities have long known that they must find common cause and share resources to advance their well-being. Tough economic realities, severe challenges to the agricultural economy (particularly dairy, which is 75 percent of the sector), and a dispersed and aging population make this increasingly difficult.

Communities must identify their assets and address their challenges. By learning the skills of effective leadership, how to develop the capacity to get things done, and the importance of ensuring a variety of voices are engaged, together we can create community solutions that are comprehensive and serve the public good.

Science Emphasis Area

Education and Multicultural Alliances, Family & Consumer Sciences, Youth Development

Foundational and Exploratory Research in Agriculture

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Basic scientific knowledge is critical to agriculture. This area will support the basic life science research necessary for Agricultural Experiment Station faculty to plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging economic opportunities.

Science Emphasis Area

Agroclimate Science, Bioeconomy, Bioenergy, and Bioproducts, Environmental Systems, Food Safety, Human Nutrition, Sustainable Agricultural Production Systems

Nutritional Value, Food Security and Food Safety

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Supports research, education and extension that supports and identifies effective measures to make informed, science-based decisions that will reduce disease, improve health, and ensure the accessibility, safety, and viability of our food supply. This area improves global capacity to meet nutritional and food security goals, including availability, acceptability, and utilization of foods.

Science Emphasis Area

Food Safety, Human Nutrition

Quality of the Natural Environment

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Focus: Integrate business and conservation to improve the quality of the natural environment where Vermonters live, work and play.

The quality of Vermont's natural environment is critical to the health of some key industries associated with Vermont's identity: agriculture, forestry and tourism. Key resources—such as clean water, toxin-free soils and bucolic landscapes—are all vulnerable to compromise without sustainable management, arising from high-quality research and the support of Vermonters informed about the issues.

The natural environment is also key to the quality of life for Vermonters in a broader context. Climate change impacts include more frequent and more intense weather events such as Hurricane Irene, as well as changes in average annual temperatures. These impacts directly affect the welfare, public health and financial well-being of Vermonters. Hence, attention to long-term solutions, grounded in research and education about climate change adaptation and mitigation, will lead to greater security for all the state's residents.

Finally, Vermont is blessed with a unique and diverse natural heritage, which is as unperturbed as that of any state in the region; preservation of this biodiversity is an investment in the future. Our forest and lake ecosystems harbor resources with potential value to public health and human enterprise that are, as yet, completely unknown to us, to be discovered in future inquiries.

Science Emphasis Area

Agroclimate Science, Bioeconomy, Bioenergy, and Bioproducts, Environmental Systems, Sustainable Agricultural Production Systems

Resilience of Families and Individuals

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Focus: Increase the resilience of families and individuals around health, education and personal and family well-being.

Geographic isolation, low-density settlement patterns, dependence on agriculture, continued population loss and economic distress characterize Vermont's rural communities. The percentage of food insecure households in Vermont increased from an average 9.1% between 1999-2001 to an average of 13.2% between 2011-2013 (Vermont Sustainable Jobs Fund, 2014). Impoverished individuals and families, who experience the greatest risks related to health, housing and food, have the least capacity to recover from shocks to their financial security.

Although considerable research and policy attention has focused on problems associated with substance use and abuse in urban settings, studies show that rural youth also are at risk for early onset of

substance use and its associated negative consequences (Cronk & Sarvela, 1997). Providing youth with opportunities to build connections to neighbors, schools, community organizations, or activities that support healthy behaviors, is central to helping them build a sense of belonging, a necessary ingredient for resilience.

Building that connection is even more critical, however, with a declining population. According to "Advance Vermont", "… current demographic declines and college enrollment trends will lead to a net loss of 6,664 working-age Vermonters with a degree or credential of value by the year 2025. Vermonters need to be competent in both life and job skills to be successful and economically stable, yet Vermont has not yet taken significant steps to increase the educational level of its youngest adults.

Science Emphasis Area

Education and Multicultural Alliances, Family & Consumer Sciences, Human Nutrition, Youth Development

Sustainability of Vermont Agriculture, Food and Forests

Initiated on: Nov 26, 2019
State: Vermont

Term Length: Long-term (>5 years)

Focus: Improve the financial, environmental and social sustainability of Vermont's agriculture, food and forest sectors.

Vermont's agriculture, food and forest sectors are fundamental to the existence of a vibrant economy in our small, rural state. The 2017 USDA Census of Agriculture (https://www.nass.usda.gov/AgCensus/) indicates that Vermont's agriculture sector is the largest in New England from an economic perspective, with dairy and maple dominating. However, ongoing low milk prices are eroding the financial stability of the dairy industry.

As the number of dairy farms decreases, other types of farms (i.e. specialty crops, vegetables, grazing production) are growing and diversifying with value-added products, agritourism and innovations that increase viability. Innovations in the Vermont food system have been recognized across the region and nation, particularly those related to small- and mid-scale operations. With these significant advances in Vermont's agriculture and food sectors, comes an opportunity for greater education, technical assistance and research to further promote financial, environmental and social sustainability.

Vermont is 74 percent forested, the fourth most forested state in the country. Vermont's forests play a significant role in the vitality of our economy, our communities and our environment. Our engagement and investment is needed as our forested landscape faces threats such as climate change, the introduction and spread of new invasive pests and diseases, forest land development, an aging landowner population, a struggling forestry workforce and a forest products industry in decline nationwide.

A thriving economy, functioning natural systems and high quality of life for Vermonters rely on maintaining healthy forests and agricultural lands across the state's landscape.

Science Emphasis Area

Bioeconomy, Bioenergy, and Bioproducts, Environmental Systems, Food Safety, Sustainable Agricultural Production Systems