

Specialty Crop Block Grant Agreement No. 15-SCBGP-VT-0010

Final Performance Report to USDA Agricultural Marketing Service

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Project 1: Evaluating the Efficacy of Biostimulants and Biofungicides for Downy and Powdery Mildew in Specialty Crops

PROJECT SUMMARY

With weather patterns becoming more erratic, disease pressure and crop loss will continue to increase on our specialty crop farms in Vermont. Biostimulants and biofungicides are especially appealing for combatting disease because of their potential effectiveness, broad application across a variety of specialty crops, and apparent low toxicity, which increasingly appeals to both farmers and consumers. Powdery mildew consistently appears on cucurbit crops throughout Vermont and the northeast, negatively affecting diverse vegetable operations. Downy mildew also represents a large problem for the viability of the hops industry, in light of increasing demand for hops from brewers. There has been little research conducted on the use of biological controls and biopesticides to manage mildew diseases in the Northeast.

Downy and powdery mildew are diseases that plague specialty crop operations throughout the Northeast. Hop downy mildew (caused by *Pseudoperonospora humuli*) is specific to hops and is the most devastating disease in hopyards in the northeast. Similarly, powdery mildew is one of the most significant diseases of cucurbits, occurring as an annual issue. Powdery mildew is caused by many different species of fungi in the order Erysiphales. In spite of using tolerant and resistant varieties, fungicides, cultural and management practices, these crops continue to face mildew damage. These diseases are likely to worsen given current and impending climate changes.

More frequent rainfall events projected by climate change models for the northeast region could result in farmers finding it difficult to keep residues of contact fungicides on plants, triggering applications that are more frequent. Farmers are likely to respond to more aggressive and invasive weeds, insects, and pathogens with increased use of herbicides, insecticides, and fungicides. This will not only increase costs for the farmer, but will have society-wide impacts by increasing pesticide loads to the environment, and

increasing risks to food safety and human exposure to pesticides. Biopesticides are a potential low-impact management tool that has yet to be adequately explored in the northeast or any region of the United States.

Research evaluating biopesticides is timely, considering that the increasingly unpredictability of climatic events has come when there is an increase in interest and growth of hops production. This new industry is threatened by production difficulties. Likewise, cucurbit crops face powdery mildew and often downy mildew on a yearly basis, contributing of losses up to 50%. The family of cucurbits is an important part of the diversified mix of a typical vegetable farm in Vermont and throughout the northeast. Vegetable and Berry specialist, Dr. Vern Grubinger, has stated that powdery mildew is widespread on cucurbit crops throughout Vermont. The impact of the disease is seasonally dependent and still represents a consistent loss.

There is also a need for disease biology and integrated pest management education. Some hop growers reported using products that are listed only for powdery mildew, which has not yet been sighted in Vermont, rather than downy mildew. The Northeast Hops IPM Working Group identified a priority for studying a diversity of pest controls including IPM, organic, sustainable, and conventional methods. Biological controls represent a significant gap in the range of possible control products that have been tested.

There has been little research conducted on the use of biological controls and biopesticides to manage mildew diseases in the Northeast. The objectives of this project were to 1) determine the efficacy of popular biofungicides and biostimulants in hops and cucurbits, and 2) enhance outreach programs and opportunities for Northeast farmers to learn about relevant IPM strategies.

The biofungicide trials were performed for two years at Borderview Farm in Alburgh, VT. Biopesticides were evaluated on a resistant and susceptible variety of hops and cucurbits. The most important result was the value of selecting varieties that are disease resistant/tolerant to these diseases. Varieties with disease resistance had less incidence and severity of mildew. In hops, the biofungicides were largely ineffective in controlling downy mildew in 2015 or 2016. The application of Champ™ provided the best protection of the plant from downy mildew infection. It also appeared to help control late season cone blights that impacted quality. In squash, the biofungicide products Regalia™ and Champ™ were effective at reducing powdery mildew infection on the plant throughout the season. However, yields were not improved compared to the control or any of the other treatments.

UVM Extension hosted 2 field days and gave 4 presentations sharing identification, scouting, and IPM options for mildew control to over 1400 stakeholders. Online outreach materials including 4 research bulletins, 2 blogs, a webinar and a video were developed and delivered to stakeholders.

PROJECT APPROACH

Briefly summarize the activities and tasks performed during the entire grant period. This section should discuss the tasks provided in the Work Plan in your approved project proposal and include significant results, accomplishments, conclusions, and recommendations as well as favorable or unusual developments.

See below for a copy of the work plan. Each task is addressed in the description given below.

Task	Project Activity	Participant	Timeline
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1	Develop project verification and evaluation tools. Survey farmers at NEHA & VVBGA Annual Meetings. 450 participants. Post survey online.	UVM Extension, VVBGA, NEHA	January – February 2016, 2017
2	Work with hop and vegetable growers to develop list of biofungicide and/or biostimulants to be evaluated.	UVM Extension, VVBGA, NEHA	February 2016
3	Order biofungicides, seed, and other project materials.	UVM Extension	February 2016, 2017
4	Finalize research experimental design and data collection methods.	UVM Extension	March 2016, 2017
5	Start cucurbit plants in greenhouse.	UVM Extension	April 2016, 2017
6	Prepare existing hopyard at Borderview Farm for trial (pruning, trellising, training, weeding).	UVM Extension	April – May 2016, 2017
7	Plant cucurbit study.	UVM Extension	May 2016, 2017
8	Collect data on disease infection rates and severity, apply biofungicides accordingly in hops and cucurbits.	UVM Extension	May – August 2016, 2017
9	Post blogs and articles in VVBGA weekly field reports on how to scout for disease and control options	UVM Extension	May – August 2016, 2017
10	Collect video footage to develop YouTube Video and other materials for scouting and diagnosis of disease	UVM Extension	May – August 2016
11	Host on-farm field day to highlight trials and teach participants about disease and scouting techniques, 200 participants	UVM Extension	August 2016, 2017
12	Harvest hops and collect data on yield and quality	UVM Extension	August – September 2016, 2017
13	Harvest cucurbits and collect data on yield and fruit quality	UVM Extension	September 2016, 2017
14	Analyze results, write reports, edit and finish video, and post online	UVM Extension	November – December 2016, 2017
15	Submit annual report	UVM Extension	December 1, 2016
16	Present findings at annual NEHA, VVBGA, and other related meetings, 425 participants.	UVM Extension, VVBGA, NEHA	January – February 2017
17	Finish project evaluation and submit final grant report	UVM Extension	December 1, 2017

In December 2015, suitable biofungicide and biostimulants were researched as potential products to test, as described in Task#1. In January 2016, vegetable growers were surveyed through the Vermont Vegetable and Berry Growers Association to determine their familiarity with biofungicides and request suggestions in regards to biofungicides that should be evaluated in the trials (Task#2). Using information garnered through the survey as well as our literature review five biofungicides were selected to test within a winter squash trial and three biofungicides to test on hops during the 2016 growing season. For the squash trial, an acorn squash variety 'Jet' which is susceptible to downy mildew and 'Reba' which is purported not to be susceptible. Biofungicides, seed, and field materials were purchased in February (Task#3) and research design was finalized in March 2016 (Task#4). The squash study was repeated in 2017, however 2 additional biofungicides were added to the treatment list in response to farmer feedback received at a grower meeting.

In both years, squash were started in the greenhouse in mid-May (Task#5) and planted in June (Task#7). Squash was sprayed according to label (approximately every 7 to 14 days) with the biofungicides beginning about two weeks after transplanting (early June) and commencing approximately 2-weeks before harvest. On average the treatments were applied 5 times each season. The squash plants were monitored and data was collected weekly on powdery mildew presence and degree of infection (Task#8). Upon harvest, number of plants per plot, number of fruit harvested, number of marketable fruit, and marketable fruit yields per plot were recorded. A subsample of the harvested squash per plot was set aside in storage and has been sorted every 2-3 weeks, removing rotting squash as a means of capturing post-harvest storability (Task#13). Photos were taken on scouting and disease severity, to be used in the development of outreach materials (Task#10).

Two hop cultivars were chosen for this experiment: Cascade, a downy-mildew-susceptible cultivar, and Nugget, a cultivar that is moderately resistant to downy mildew and final research design for the hops trial was determined in March (Task#4). In April and May, the hopyard was prepared (pruned, trellised, weeded) for the trial (Task#6).

Unfortunately, in 2017 the hops were in very poor condition after having been grown for nearly 10 years and the majority were terminated from the yard. It is very likely that the hop yard was one of the oldest within the Northeast. There is very little knowledge on the lifespan perennial hops for this climate and we learned that the productivity and health severely declines after ~8 years. Therefore, the hop yard was terminated in order to prevent further disease contamination for future hop plants that will be grown under the same infrastructure in that location. With a much smaller hop yard, we were unable to perform the hop biofungicide trial in 2017. Furthermore, the data would have been severely skewed as our plants were already highly diseased and would not have been representative of an average hop plant. Luckily, we did perform the biofungicide trial in 2015 just prior to the start of this grant. The treatments across 2015 and 2016 were similar and helped us provide growers with more accurate conclusions in regards to this project.

In 2016, the hops were sprayed seven times throughout the season on a weather-permitting basis beginning on May 27 (Task#8). The main transport mechanism of downy mildew is through moisture and rain splash, so the plants were only sprayed prior to significant moisture events. The hop plants were scouted weekly for the presence of downy mildew in the form of basal and aerial spikes and leaf lesions (Task#8). At harvest in September 2016, overall plant disease severity was noted on a scale from 0-5 (Task #12). 100 cones were separated from each plot after harvest and assessed for disease presence and severity. A smaller subsample of cones were taken from each treatment and assessed for downy mildew under a microscope. Photos were taken of cones to display aesthetic differences between biofungicide and biostimulants treatments for use in outreach materials (Task#10).

In 2016 and 2017, the Annual Crop and Soil Field Day held at Borderview Farm in Alburgh, VT highlighted the mildew research projects. Afternoon sessions focused on scouting for downy mildew in hops and powdery mildew in cucurbits (Task#11). In addition, participants learned about management strategies for these diseases as well as any research available at that time. There were a total of 600 participants across the 2-year period.

During the fall/winter of 2016 and 2017, the data collected from trials were analyzed, written into a report, and the findings were posted to the University of Vermont Northwest Crops and Soils Program website (Task#14). Results showed that the copper-based fungicide, Champ, which serves as an industry standard for organic approved fungicides, and the plant extract-derived fungicide, Regalia, were most effective at minimizing powdery mildew for both Reba (powdery mildew resistant) and Jet (powdery

mildew susceptible) acorn squash. Furthermore, varietal selection proved important as Reba had less powdery mildew infection compared to Jet. However, Reba yielded less than Jet.

In the same manner, data from the hops biofungicide trial were analyzed, written into a report, and the findings posted to our website (Task#14). Results from 2015 and 2016 showed that the hop variety, Cascade (moderately resistant to downy mildew) hop cones, had lower rates of downy mildew infection compared to Nugget (susceptible) cones. Similarly, the copper product Champ was the most effective at controlling downy mildew in hops. In addition, copper treatments also reduced cone blight diseases later in the season. Hence these treatments resulted in production of higher quality hops.

The annual report for this trial was completed and submitting in December 2016 (Task#15).

In January 2017, results from the cucurbits study were presented at the Vermont Vegetable and Berry Association annual conference (Task#16).

In May 2017, two articles were written and posted on the UVM Extension Northwest Crops and Soils Program blog, 'What's happening,' on downy mildew scouting, identification, prevention, biofungicide treatment, and a link to the full biofungicide report was included. Due to unforeseen circumstances a hop downy mildew video was not produced in place of this deliverable a webinar was given by Dr. David Gent to help farmers learn how to identify, scout, and manage downy mildew in hop yards. The link can be found at <https://www.youtube.com/watch?v=sNLDK7Mr0h8&feature=youtu.be>.

A blog post on powdery mildew identification, conditions for growth, and prevention was prepared and sent out to the VVBGA list serve of 870 subscribers in July 2017, along with research results (Task#9).

We created a YouTube video, providing information on how to identify, scout, and prevent powdery mildew, biofungicides, and our research results. The video has been posted to the UVM Extension Northwest Crops and Soils webpage, the Northwest Crops and Soils Facebook page, and our YouTube page and has had 80 views (Task#14).

The final grant report was submitted on March of 2018 (Task#17).

GOALS AND OUTCOMES ACHIEVED

The objectives of this project were to 1) determine the efficacy of popular biofungicides and biostimulants in hops and cucurbits, and 2) enhance outreach programs and opportunities for Northeast farmers to learn about relevant IPM strategies. The objectives of the project were met through field research and outreach programs.

The field research activities described under the 'Project Approach' section were completed in order meet the objective of gaining technical knowledge on biofungicides by determining the efficacy of popular biofungicides and biostimulants in hops and cucurbits. Results from this research were successfully written into reports and shared through our website and distributed to stakeholders at outreach events.

Our outreach goals included hosting a disease scouting workshop at the UVM Extension NWCS annual field day, presenting at producer meetings, creating 1 YouTube video, and writing 2 mildew blogs. Over the project period two field days were hosted and project results as well as scouting techniques and control strategies were shared with approximately 600 attendees. In December 2016, a presentation was given at the Northeast Hops Alliance (NEHA) Annual Meeting in New York (265 attendees). In 2017, presentations were given at the Vermont Vegetable and Berry Association annual meeting (204 attendees), at the NEHA annual meeting (155), and at the UVM Annual Hops Conference (185 attendees).

A total of 1,409 stakeholders were provided information on how to identify, scout, and manage mildews in cucurbits and hops.

A YouTube video, providing information on how to identify, scout, and prevent powdery mildew, biofungicides, and research results was created. The video has been posted to the UVM Extension Northwest Crops and Soils webpage, the Northwest Crops and Soils Facebook page, and our YouTube page and has had 80 views. We were unable to create a video on biofungicides in hops since that trial was shortened to only 1 year. However in place of this deliverable a webinar was given by Dr. David Gent to help farmers learn how to identify, scout, and manage downy mildew in hop yards. The link can be found at <https://www.youtube.com/watch?v=sNLDK7Mr0h8&feature=youtu.be>.

In addition, 3 blogs, 2 of which were posted to the UVM Extension NWCS “What’s Hoppening” blog and the third was posted to the Vermont Vegetable and Berry Growers Association newsletter reaching 870 subscribers.

During our annual field day, we hosted a disease scouting session focusing on scouting for downy mildew in hops and powdery mildew in cucurbits. Of those who completed the post event survey (n=65), 89% felt that they increased their scouting knowledge, 91% increased their knowledge on conditions where pests and diseases thrive, and 86% increased their knowledge on control strategies.

Results from the cucurbits study were presented at the Vermont Vegetable and Berry Association annual conference. Ninety-three percent of survey respondents (111 responses) learned information on scouting, identification, and control, 54% wrote that they would make an on-farm change based on the information they gained.

Farmers surveyed following the 2017 UVM Annual Hop Conference indicated they had changed practices as a result of the research program. Of the 110 attendees returning post event surveys, 79% of attendees said the project helped them improve pest identification and 85% indicated the program helped them build scouting skills. As a result of these skills 68% of the attendees said they were able to reduce disease pressure, 53% said they were able to reduce pesticide application, and 56% were now selecting low environmental impact pest control options. Finally, 60% of the attendees said that hop quality was improved and 35% increased yields as a result of the program. Unfortunately, we were not able to collect specific data indicating to what extent yield and quality were improved.

BENEFICIARIES

Specialty growers who focus on vegetable and hops production benefited from the completion of this project, as well as fellow researchers and outreach organizations. The project was able to reach over 1400 stakeholders directly through outreach programs. Online materials will provide the project results to reach even more stakeholders and also provide longer term impacts from this short term project. This was an exciting project that provided farmers with concrete evidence about the efficacy of biofungicides that farmers were already implementing or interested in implementing. Based on survey results it was clear that farmers had learned important information on how to properly identify and scout for these pests. In addition, the project also created information and education that helped lead to change in the quantity and type of fungicides being applied to hops. A longer term project would have allowed data collection on crop yield and quality impacts to estimate economic impact of the project.

LESSONS LEARNED

Aside from the lessons learned from our research, listed in the ‘Project Approach’ section, we had the unexpected experience of terminating a significant portion of the UVM experimental hopyard. The

experimental hopyard was nearly 10 years old and had experienced disease issues in past years. It is very likely that the hopyard is the oldest within the Northeast. There had been very little knowledge on the lifespan of perennial hops for this climate and we learned that the productivity and health can severely declines after 8 years. Therefore, the hop yard was terminated in order to prevent further disease contamination for future hop plants that will be grown under the same infrastructure in that location. All project deliverables had been met prior to this decision being made in 2017.

CONTACT PERSON

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ADDITIONAL INFORMATION

See <https://www.uvm.edu/extension/nwcrops/research> for research reports on our field trials, including those listed below.

2016 Evaluating the Efficacy of Organic Approved Fungicides for the Control of Powdery Mildew in Squash – UVM Extension, NWCS Research Report, https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/2016-ResearchReports/2016_Squash_Biofungicide.pdf

2015 Hop Biofungicide Trial – UVM Extension NWCS Research Report, https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/2015-ResearchReports/2015_Hop_Biofungicide_Trial.pdf

2016 Hop Biofungicide Trial – UVM Extension, NWCS Research Report, https://www.uvm.edu/sites/default/files/Northwest-Crops-and-Soils-Program/2016-ResearchReports/2016_Hop_Biofungicide_Trial.pdf

Strategies for preventing, reducing, and scouting for powdery mildew on cucurbits – UVM Extension, NWCS YouTube video, <https://www.youtube.com/watch?v=00mAyMRwuKE>

Managing Downy Mildew of Hops, David Gent, April 2017, webinar can be viewed at <https://www.youtube.com/watch?v=sNLDK7Mr0h8&feature=youtu.be>

What's Happening blog – UVM Extension, NWCS, see May 2017 for downy mildew blogs <http://blog.uvm.edu/hoppenin>

See attached Appendix for a copy of the presentation, 2016 Biofungicide Efficacy in Squash Trial, given at the 2017 Vermont Vegetable and Berry Association Annual (VVBGA) Meeting.

See attached Appendix for a copy of the powdery mildew blog sent in the VVBGA newsletter.

See attached Appendix for a copy of the presentation, Hop Research Updates, given at the 2016 Northeast Hops Alliance Meeting and the 2017 Vermont Hop Conference.

Project 2: Supply Chain Development for Vermont-grown Organic Mesclun and Frozen Berries at the Intervale Food Hub (Previously Accepted)

PROJECT SUMMARY

The Intervale Center requested funds to support supply chain development for two potential aggregated products, packaged organic salad greens and frozen organic mixed berries, to grow both retail and wholesale markets for these products in collaboration with farmers. For these products, consistent supply at the right quality, volumes and prices can be a challenge for Vermont growers, especially for larger retail and wholesale markets. For each product, we completed market feasibility studies, evaluated cost of production and alternative models of production for increasing efficiency, developed best management practices for standardization, and conducted preliminary market research to determine the feasibility of aggregation. We then piloted an aggregated organic mesclun product through the Intervale Food Hub with the goal of securing \$12,000 in sales by project end.

Through this project, we gained a clearer understanding of the potential and barriers to growing these markets and where feasible, started to create a pathway for growers to enter these markets through collaboration and aggregation. Our goal was to understand the feasibility of developing these products for local and regional markets with a secondary goal of selling \$12,000 worth of greens through the Intervale Food Hub.

This project was an innovative response to two identified needs in the marketplace. When we originally proposed this project, the organic berry market was booming with cooperative grocery stores along moving over 20,000 pounds of frozen organic raspberries and blueberries annually. We wanted to better understand this market so that farmers could know whether or not it made financial sense to make the appropriate investments in their operations to scale up production. Similarly, retail markets were struggling to find a consistent, high quality supply of organic mesclun greens at the volumes and prices they needed during the summer and shoulder seasons. We sought to help farmers to work together to improve quality controls and increase quantities to help establish the product the market demands, if collaborating in this way made financial sense.

PROJECT APPROACH

Project Activity	Proposed Accomplishments	Actual Accomplishments
Feasibility Study: Organic Mesclun Product	Best Management Practices Enterprise Budget and Cost of Production Analysis Market Analysis Beginning in November 2015; Completed by May 2016	Completed. Please see feasibility study attached.

Feasibility Study: Organic Frozen Berry Products	Same as above Beginning in November 2015; Completed by May 2016	Completed. Please see feasibility study attached.
Creation, Launch and Pilot of Organic Mesclun Product for Intervale Food Hub	Create Best Management Practices (BMPs) Require producers to meet BMPs Purchase product Beginning in March 2016; Completed by November 2016	Completed. \$20,835.37 of product sold.
Dissemination of Project Results	Share with Intervale Food Hub, Farm Viability Network, VVBGA, etc. Beginning in and Completed by November 2016	In progress. Before the end of the year, we will share with producers, VVBGA, and make available on the Intervale Center website. Will be shared with Vermont Farm Viability Network in 2017.
Evaluation of Project	Complete Performance Monitoring Plan Beginning in November 2016; Completed by December 2016	Completed.

Conclusions and Recommendations

This project's most significant results were the creation of best management practices for the production of mesclun and blueberries for a frozen, consolidated product. The mesclun best practices were shared with and adopted by Intervale Food Hub mesclun producers, which resulted in a more uniform, consistent and higher quality product. The market analysis and enterprise budgets we completed are also important because they demonstrate where the opportunities are within these product categories for small and mid-scale farmers.

Key conclusions include the following:

- A market opportunity does exist for both of these products in local and regional markets; however, price remains a limiting factor.
- Harvest and post-harvest labor are the two biggest expenses in small-scale production of organic mesclun and frozen blueberries. Creating efficiencies in these areas is essential to lowering production costs and increasing profitability.
- Post-harvest processing practices require a high level of management and oversight to ensure an end product that meets both quality standards and consistent supply in the marketplace.
- Regional market channels may require increased product liability coverage and food safety certifications. Producers at any scale should be aware of and follow current FSMA regulations.

- An aggregator model for mesclun and blueberries would be beneficial to manage end-product quality, build efficiencies in scale and meet increased food safety requirements in the marketplace. That being said, greater production and market analysis needs to be conducted to determine appropriate scale and point in the supply chain for aggregation.

Producers and processors who participated in this project include Intervale Community Farm, Diggers Mirth Collective Farm, Pitchfork Farm, Rockville Market Farm, Red Wagon Plants, Waterman's Berry Farm, Vermont Food Venture Center, and Sunrise Orchards. Buyers from Intervale Food Hub, City Market/Onion River Cooperative, University of Vermont Medical Center, University of Vermont Sodexo, Deep Root Cooperative, Whole Foods Market, Vermont Public Schools/UVM Center for Rural Studies, Reinhart Foods, Black River Produce, Citizen Cider, and several other individual suppliers of these products shared market and pricing data.

Furthermore, the Intervale Center team who contributed to this project included Sona Desai and Bobby Young from the Intervale Food Hub and Sam Smith and Maggie Donin from the Agricultural Services staff. Mark Cannella, UVM Farm Business Development Specialist, and Rob Rock, Farmer at Pitchfork Farm, reviewed and helped us refine enterprise budgets.

GOALS AND OUTCOMES ACHIEVED

Activities completed are detailed in the chart above. Our primary goal was to understand the feasibility of development aggregated organic mesclun greens and frozen berry products for local and regional markets. Our secondary goal was to pilot an organic greens product through the Intervale Food Hub, resulting in \$12,000 in sales.

Completed Measurable Outcomes

- Two Feasibility Studies: Both feasibilities have been completed and are attached. They have also been distributed to 30 Intervale Food Hub suppliers and to hundreds of farmers through the Vermont Vegetable and Berry Growers Association Listserv. We also posted the studies on the Intervale Center website and will share our work with service providers through the Vermont Farm Viability Network in 2017.
- Sales of Greens: We sold \$20,835.37 of consolidated mesclun product through the Intervale Food Hub. This growth in sales beyond our target of \$12,000 is due to increased demand from wholesale markets for bulk product, as well as an extended field mesclun season due to warm temperatures and suppliers using season extension methods.

BENEFICIARIES

This project benefited farmers both within and outside the Intervale Food Hub supplier network, as well local processors, distributors and buyers. The greatest impact will be on the producers participating in the study, which included five organic mesclun producers, one organic blueberry grower, and one fruit and vegetable processor. Three of these mesclun producers adjusted product standards to supply the Intervale Food Hub, which resulted in over \$20,000 in sales, an increase of 66% over initial targets. Since the completion of the study, the participating blueberry producer and processor have begun working together to create a saleable product and test the current market potential. Outside of direct participants, this study will reach over 300 small fruit and vegetable growers through the Vermont Vegetable & Berry Growers Association. The information presented will provide greater current production and market analysis that will in turn result in positive impacts to the quality of supply and management in both cropping systems.

LESSONS LEARNED

The most significant lesson we learned through this process is that completing these studies took more time and financial resources than originally anticipated. We overspent by about 50%.

However, the added investment of our staff time was worth it. We were able to achieve a higher quality, more consistent product and grow sales of mesclun as a result of developing and sharing best management practices with our suppliers. We imagine future opportunity for a consolidated mesclun product that can meet the quality standards and price points of the regional market and will continue to pursue this opportunity with our growers. The primary blueberry grower that participated is developing a potential product line, and as we share our research with other growers, they may find opportunities to adopt best practices and adjust markets to take advantage of opportunities for consolidated products.

CONTACT PERSON

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ADDITIONAL INFORMATION

The feasibility studies are available online at <https://www.intervale.org/research>:

- (2016) [Supply Chain Development for Vermont-grown Frozen Blueberries](#)
- (2016) [Supply Chain Development for Vermont-grown Organic Mesclun](#)

Project 3: Utilizing State Information Centers to Support Direct Marketing of Apples, Cider & Wines – Final Report (Previously Accepted)

PROJECT SUMMARY

Many of Vermont's small specialty crop producers and processors, including apple, cider and wine producers, rely heavily on direct-to-consumer sales for their incomes. Vermont Information Centers and Welcome Centers serve an estimated 3.3 million visitors annually, creating an opportunity to reach an important potential market for high value products that is five times larger than the state's population.

In a state without billboards and with only limited directional signage, the state-owned centers provide an important venue for disseminating information to visitors, aiding in their decisions to engage in recreational, dining and shopping activities while in Vermont.

The grantee, representing producers of apples, ciders and wines, agreed to take advantage of an offer extended by the State of Vermont's Department of Building & General Services for discounted display space offered by the state to provide twelve months of a year-round outreach at seven locations around the state.

PROJECT APPROACH

The grantee contracted with the **State of Vermont Information Centers** for display space in their facilities in the following areas:

1. Bennington (18" w x 24" h)
2. Derby Line (17" w x 22" h)
3. Fair Haven (24" w x 36" h)
4. Guilford (17" w x 22" h)
5. Hartford (28" w x 22" h)
6. Randolph (36" w x 24" h)
7. Sharon (36" w x 24" h)

Vermont Information Centers



Sharon



Guilford



Hartford



Fair Haven



Bennington



Typical Information Center Display

Not pictured: Derby Line, Randolph

Slight variations of the graphic displays (see following page) were used at the seven sites.

Vermont Apples, Ciders & Wines

Vermont's specialty crop producers invite you to try some of the many delightful products originating on our farms. Apples, grapes, honey, maple syrup and other products can be purchased fresh from our farms. These same products are also transformed into an ever-growing array of specialties—wines, ice wines, ice ciders, hard ciders, sweet ciders, sparkling ciders and meads. We invite you to visit our cideries, farms, orchards and wineries while you're in Vermont—and to take some of our products to your friends and family back home.

Apple Shipment at Hominway Orchard, West Middlebury, c. 1910

Scan our **DigInVT** QR code for listings and directions to Vermont apple orchards, cider mills, and wineries. DigInVT also lists many restaurants offering these products for your dining pleasure.
<http://www.diginvt.com>

Display sponsored by:
 Vermont Fresh Network/Dig In Vermont
 Vermont Grape & Wine Council
 Vermont Hard Cider Association
 Vermont Tree Fruit Growers Association

in cooperation with the U.S.D.A. Agricultural Marketing Service/Specialty Crop Program

The displays were completely installed by June 1, 2016. DigInVT.com reported the following visits to their site:

- 13,822 sessions
- 10,097 users
- 61,046 page views
- 4.42 page views (average)
- 4.5 minutes average time on site
- 27.7% (3,828 return visitors)
- 5,392 direct search
- 4,954 general search

DigInVT.com linked visitors directly with individual apple, cider and wine producers' websites, reducing a visitor's search time. While honey and maple producers were not part of this activity, several honey and maple producers were included in the original application:

"The specialty crop producers benefiting from this project include growers of apples and other tree fruits, grapes, berries, maple and honey. Each of these crops is used to produce value-added products, including sweet cider, wines and hard ciders (technically, wines). The partners on this project will include the Vermont Tree Fruit Growers Association, the Vermont Grape & Wine Council and the Vermont Cider Makers Association, each of which is a Vermont not-for-profit grower/producer organization. It should be noted that Vermont's wine industry utilizes considerable quantities of Vermont specialty crops from other producers in its wine production, including apples, blueberries, rhubarb, strawberries, currants, honey and maple syrup/maple sugar.

"The project will benefit the specialty crop beneficiaries by helping to increasing their DTC sales, as well as sales of their products through Vermont restaurants, termed "intermediary" channels by USDA."

Since several businesses produce more than one specialty crop product (e.g. apples, hard cider and wine), some were listed on the DigInVT site multiple times.

Vermont Sweet & Hard Apple Ciders

- | | |
|--------------------------------------|---|
| 1. Allenholm Farm | 13. Hooker Mountain Farm |
| 2. Boyer's Orchard and Cider Mill | 14. Kents' Corner Sugarhouse |
| 3. Brookfield Bees | 15. Northcourt Orchard |
| 4. Champlain Orchards | 16. Northeast Kingdom Tasting Center |
| 5. Chapin Orchard | 17. Oliver Hill Farm |
| 6. Citizen Cider | 18. Palmer Lane Maple |
| 7. Cold Hollow Cider Mill | 19. Rutland Winter Farmers Market |
| 8. Eden Ice Cider Company | 20. Shelburne Orchards |
| 9. Grand View Winery | 21. The Woodchuck Cider House |
| 10. Green Mountain Orchards | 22. West Swanton Orchard and Cider Mill |
| 11. Hackett's Orchard | 23. Windfall Orchards |
| 12. Hall Home Place & Hall's Orchard | 24. XR Maple Farm Inc |

Vermont Wineries

- | | |
|--|-------------------------------------|
| 1. Artesano | 9. Lincoln Peak Vineyard and Winery |
| 2. Boyden Valley Winery and Spirits | 10. Neshobe River Winery |
| 3. Due North Vineyard & Winery | 11. North Branch Vineyards |
| 4. East Shore Vineyard | 12. Otter Valley Winery |
| 5. Eden Ice Cider Company | 13. Putney Mountain Winery |
| 6. Fresh Tracks Farm Vineyard & Winery | 14. Shelburne Vineyard |
| 7. Grand View Winery | 15. Snow Farm Vineyard |
| 8. Hall Home Place & Hall's Orchard | |

Vermont Apples

- | | |
|--------------------------|-----------------------------------|
| 1. Allen Brothers' Farms | 14. Happy Valley Orchard |
| 2. Allenholm Farm | 15. Kingdom Brewing |
| 3. Brookfield Bees | 16. Mad Tom Orchard |
| 4. Burt's Apple Orchard | 17. Northcourt Orchard |
| 5. Champlain Orchards | 18. Rutland Winter Farmers Market |

- | | |
|--------------------------------------|---------------------------------------|
| 6. Chapin Orchard | 19. Scott Farm |
| 7. Citizen Cider | 20. Shelburne Orchards |
| 8. Cortland Hill Orchard | 21. Sunrise Orchards |
| 9. Dolly Gray Orchard | 22. Vermont Spirits |
| 10. Douglas Orchard | 23. Wellwood Orchards |
| 11. Green Mountain Orchards | 24. West Swanton Orchard & Cider Mill |
| 12. Hackett's Orchard | 25. Windfall Orchards |
| 13. Hall Home Place & Hall's Orchard | |

The grantee believes that there was little opportunity for non-specialty crop producers to benefit from this activity.

Partners in the activity contributed by submitting photographs for use in the Vermont Information Center displays, planning meetings to discuss layouts, meetings with the graphic designer. Each specialty crop producer was responsible for maintaining his or her business website and for paying the nominal fee for being included on the DigInVT.com website. DigIn Vermont took a substantial lead in details of the determining visitors to the site.

GOALS AND OUTCOMES ACHIEVED

Measureable Outcome 1

The primary action for the activity was to design and create the displays for the seven Vermont Information Centers, drawing interest from visitors to the high-value specialty crops featured--- apples, hard cider and wines. The Vermont Grape & Wine Council was responsible for maintaining its website. The Vermont Hard Cider Association, the newest of the partnering organizations, had not yet established its own website, so the Vermont Tree Fruit Growers Association incorporated hard cider into its site.

The grantee's contract with Vermont Information Center began on June 1, 2016 and will end May 30, 2017, providing five additional months to track the effectiveness of the displays in attracting new customers.

The grantee partners have not yet determined if they will continue the displays beyond the May 30 date, but the 2016 activity has allowed them to establish a benchmark for comparisons in subsequent years.

Measureable Outcome 2

Unbeknownst to the grantee in early discussions with representatives of the state information centers, the contract for space did not include space for brochures, preventing distribution of a project brochure as originally planned. It would have cost us \$3-4 thousand additional for printing & distribution of brochures, which was beyond the project budget.

The grantee was forced to rely completely on the digital distribution of information once visitors left the centers. Incorporation of the DigInVT.com URL and QR codes into the displays did enable visitors to use their tablets, smartphones and other mobile digital devices for accessing the central website, resulting in 13,822 sessions and 61,046 page views by 10,097 users.

Measureable Outcome 3

Without the benefit of being able to distribute brochures from the sites, visitor tracking to determine the effectiveness was obstructed.

BENEFICIARIES

This project benefits over 100 small specialty crop producers and processors by assisting them in capturing a greater share of the consumer food dollar through direct-to-consumer sales by creating greater awareness of their goods and services to visitors to the state.

The specialty crop producers benefiting from this project include growers of apples and other tree fruits, grapes, berries, maple and honey. Each of these crops is used to produce value-added products, including sweet cider, wines and hard ciders (technically, wines). Vermont's wine industry utilizes considerable quantities of Vermont specialty crops from other producers in its wine production, including apples, blueberries, rhubarb, strawberries, currants, honey and maple syrup/maple sugar.

LESSONS LEARNED

A misunderstanding of the complete terms of the contract left the grantee without the capability to complete full terms (Measurable Outcomes 2 & 3). The grantee had planned on having space with each of the displays to provide 8,000 project-based brochures containing locations where targeted products could be purchased, with the goal of receiving 1,000 completed consumer survey forms. The printed materials, which were to incorporate a drawing entry form to be dropped off at any participating producer's business or mailed to the grantee were not printed, eliminating a meaningful connection of producers with consumers (visitors) and the information center displays.

CONTACT PERSON

Steve Justis, Executive Director | Vermont Tree Fruit Growers Association, Inc.
1765 Center Rd., Montpelier, VT 05602-8544
(802) 223-6502 | steve.justis@gmail.com

ADDITIONAL INFORMATION

Links to Grant Partners' Websites

DigIn Vermont (managed by Vermont Fresh Network) (<https://www.diginvt.com/>)
Vermont Grape & Wine Council (<http://www.vermontgrapeandwinecouncil.com/>)
Vermont Tree Fruit Growers Association (<http://www.vermontapples.org/>)

Project 4: Post-Harvest Management Team & FSMA-Readiness Produce Safety Workshops to Strengthen Vermont's Produce Industry

PROJECT SUMMARY

Background Supporting Project Need:

The majority of produce farms in Vermont are small businesses that direct market their products. Consequently, few farms are fully covered under FSMA's Produce Safety Rule (under 50 farms with over 500K gross sales, or majority sales non-local or to non-end-user), and fewer still are currently required by buyers to be GAPs certified. Yet to stay competitive, grow their businesses, and expand to new markets, growers must understand produce safety; write, implement, and verify produce safety plans; and train their employees in food safety practices.

Since 2010, the University of Vermont Extension's (UVM EXT) Produce Safety Program has developed educational materials, training, technical resources, and a practical certification program to support the needs of Vermont produce growers.

In 2011, UVM EXT used SCBG funds grant to develop UVM EXT's "Practical Produce Safety Program" (PPS) – a produce safety curriculum targeting small, diversified farms. This funding brought the PPS workshops to 10 new locations and the videos and factsheets provided new and needed educational information for Vermont's specialty crop growers. In 2012, UVM EXT used additional SCBG funds to produce three YouTube videos on specific produce safety practices for apple, vegetable and berry growers in Vermont. Since 2014, UVM EXT has also worked with the Vermont Vegetable and Berry Growers to develop the [Community Accreditation for Produce Safety \(CAPS\)](#), which is based on the PPS curriculum and approach. CAPS is a voluntary, online program that has helped over 130 vegetable farms write produce safety plans, and annually document the implementation of those plans.

In combination, the programs and support described above prompted well over 100 farms to write food safety plans and plans. Many of these farms further planned for infrastructure improvement, and in planning their projects reached out to UVM EXT for technical support. In 2014, it became clear that multiple members of our produce support team were independently consulting on the same farms and projects, at roughly the same time! **The idea of a coordinated "post-harvest management team (PHMT)" was a solution to this blatant inefficiency.** Thus, the PHMT project proposal was submitted and funded.

Toward the end of this PHMT project, in 2017, UVM EXT began the UVM Food Safety Web Portal Development Project. As a refinement, this new resource website for Northeastern produce growers features the case studies and lessons learned from the Post-Harvest Management Team (PHMT) project.

The larger dual goals of the PHMT project were, most-broadly, to:

1. **improve food safety** by educating farmers (through workshops, trainings and team consults) to reduce risks of on-farm microbial contamination, and
2. **strengthen the regional food system** by helping fruit and vegetable farmers improve their food safety and infrastructure, maintain existing markets, and access new markets that require a produce safety plan.

PROJECT APPROACH

We completed the specific tasks proposed in this project, and to make the most of our SCBG funds, developed and completed additional tasks to better disseminate the lessons learned from the project.

Our project approach was threefold:

1. **To develop and employ the Post-Harvest Management Team (PHMT,) using a “customer management” approach** to identify and work intensely with over seven farms over two years, supporting the planning and completion of major post-harvest improvement projects. The UVM EXT PHMT comprised:
 - a coordinator (Hans Estrin),
 - a produce safety specialist (first Ginger Nickerson and later Hans Estrin),
 - an agricultural engineer (Chris Callahan),
 - an agricultural materials specialist (Andrew Chamberlin) and
 - a farm viability business advisor (either Mark Canella or Betsey Miller).
2. **To create a web site to disseminate lessons learned.** We worked with Pete Land at [Tamarack Media](#) to augment the UVM EXT [Produce Safety Portal](#) (currently under development) with an online, **crowd-sourced case-study template** to survey and display lessons learned through our work with target farms in this project and through work with other farms in related projects. Pete has worked recently on a related project to develop the Web-based [Clearinghouse](#) for the North East Center for the Advancement of Food Safety (NECAFS)
3. **To run FSMA Readiness Produce Safety Workshops to prepare farmers to reduce risks and comply with the law:** We developed and ran **four different FSMA Readiness workshops** and conducted follow-up surveys: one recall and traceability workshop (2015), one USDA GAP training (2015), and two FSMA PSA grower trainings (November 2016 and November 2017).

GOALS AND OUTCOMES ACHIEVED

The following activities were completed to achieve the goals and outcomes identified in the project proposal. The following table highlights the main accomplishments of the project and compares specific accomplishments with the original project goals.

POST-HARVEST MANAGEMENT TEAM (PHMT):		
<ul style="list-style-type: none"> • Developed and employed project screening and team customer management approach to help eight farms complete post-harvest improvement projects over three years. • Worked with Tamarac Media developed a produce safety website with crowdsourced case study functionality to post and disseminate lessons learned from these projects. 		
Detail of Plans and Accomplishments		
Planned Activity	Planned date of completion	Accomplishments
Identify potential farmers for participation	Fall 2015 and winter 2016	As of December 2016, 14 potential farmers for PHMT participation were invited to apply, 10 farms applied,

		and seven farms were accepted as PHMT participants. See attached PHMT application.
Conduct intake, work with farmers to create post-harvest quality, infrastructure and farm viability goals, identify members for that farms' team; determine whether team is lacking a needed specialist	Winter 2016 through fall 2017, until target of four to six farms reached	By July 2018, initial PHMT visits and two or more follow-up consults to eight farms had been conducted (Dutchess Farm, Root 5 Farm, Intervale Community Center, Roots Too Farm, Sunrise Farm, Mighty Food Farm, the Last Resort Farm, Harlow Farm). Consults focused on: <ul style="list-style-type: none"> • post-harvest quality, • infrastructure and farm viability goals, • identify members for that farms' team; • diagnose if team is lacking a needed specialist
Over 12 month period coordinate scheduling of three to five meetings between each farmer and team members to develop strategy to meet farm's goals; check in with farmers as needed to make sure team is on track; document and hold members accountable to work plan; facilitate team meetings; document "lessons learned"	Winter 2016 – spring 2018	By September 2018, six or more follow-up consults with all seven PHMT farms have been conducted to refine strategies to meet farm's goals, follow up with farmer as needed to make sure team is on track, and make sure farmer is on track to reach target PHMT goals. Coordinator is currently compiling lessons learned and planning PHMT outreach strategy.
Participate in three to five meetings at each of four to six farms; work with other members of team to provide advice to farm in integrated manner to achieve farmer's goals for post-harvest quality, infrastructure and/or business plan; take notes at meetings; review and contribute to "lessons learned" materials and presentations at industry and professional meetings	Winter 2016- spring 2018	One or two additional group or sub-group meetings or phone conferences with the team for each of seven farms have been coordinated and conducted. Approximately 25 team emails with follow-up notes, summaries or directives have been sent and responded to by team members. Coordinator is currently compiling lessons learned and planning PHMT outreach strategy.

Conduct online survey and in-person evaluations with four to six pilot farms; draft "lessons learned" materials	By summer 2018	Not completed, survey development in progress.
Post "lessons learned" materials on Center for Sustainable Agriculture website, print for handouts at events, and present at VVBGA and at least one service Tamarack Media annual meeting	By fall 2018	<p>In July-September 2018, an online produce safety resource portal was developed to crowdsource, search for, and display case studies and lessons PHMT lessons learned from the PHMT farms. The following tasks have been completed:</p> <p>Planning and development of content for the case study portal:</p> <ul style="list-style-type: none"> • 20 hours of PI time • three meetings, eight hours of web planning <p>Tamarack Media developed the "sandbox" or beta site functionality to display PHMT lessons learned and case studies. This work accomplished the following (see included screen shots).</p> <ol style="list-style-type: none"> 1. Simplified the website's navigation and consolidate features into a user dashboard with help text. 2. Enhanced the website's system of user-generated (i.e. crowdsourced) content with a tagging system, notifications, and an advanced search interface. 3. Built and refined custom forms for submitting photos, videos, existing online resources, standard operating procedures, case studies, lessons learned, and Q&A. 4. Used MailChimp to create an automated weekly digest of new content to which website users can subscribe. 5. Advised UVM EXT on improving the design of the current "sandbox" version of the website to reflect branding requirements and best practices for user experience. 6. Built the website in Drupal, an open-source content management system. It should be updated as new releases of the software become available to address bugs and security flaws. Tamarack Media will monitor each site for available updates, back up the code and databases, install the updates, and

		<p>test the site to ensure there are no adverse side effects.</p> <p>7. Tamarack Media will provide ongoing support for site admins and other users.</p> <p>Other training outputs: four two- hour planning workshops were conducted with Rutland Area Food and Farm Link (RAFFL) and the Center for Rural Economy. 1) Two winter 2017 workshops with 50 participants total; 2) Spring 2018 with 27 people; 3) August 2018 with 24 people. Planning material was based on PHMT lessons learned.</p>
Write and submit final report to funders	By fall 2018/completion of project	Report completed and submitted on October 29, 2018
FSMA-READINESS PRODUCE SAFETY WORKSHOPS Targets and Accomplishments: <ul style="list-style-type: none"> • 156 farmers were trained in project-sponsored workshops • 60 or more of trainees writing new produce safety plans • 50 or more farms improved produce safety practices 		
Target (by Winter 2018)		Accomplished by October, 2106
50-80 farmers attend workshops <ul style="list-style-type: none"> • Recall and traceability workshop (2015), • USDA GAP training (2015), and • Two FSMA PSA grower trainings (2016 and 2017). 		Recall and Traceability: 52 attendees GAPs: 23 attendees FSMA Grower Training: 2016 (32 registrants) 2017 (49 attendants). Total to date: 156 farmers trained
At least 20 farms write produce safety plans that will help them comply with FSMA and/or buyer requirements		As of September 2018, at least 60 farms have written or added to plans based on participation in these workshops. This number is a minimum, based the fact that since the 23 reported farms from the 2016 update, over 50 of the 100 PSA training attendees (2016-2018) have either started or revised CAPS and/or GAPs plans, largely in preparation for

	<p>FSMA readiness review or CAPS plus certification.</p> <p>33% of respondents report they can sell to a new market because they have a food safety plan.</p> <p>58% report they have shared their plan with others (employees, buyers, etc.)</p>
At least 30 farms improve produce safety practices	<p>As of September 2018, at least 50 farms have improved produce safety practices because of participation in these workshops.</p> <p>This result is under-reported. The survey sample below suggests that over 50 of 75 workshop participants have made improvements. In addition, cross referencing reveals that 10 (59%) of the Vermont Agency of Agriculture (VAAFMs) produce safety improvement grant recipients had previously attended one of the PSA trainings.</p>

SURVEY RESPONSES indicated positive impact from workshops. Nearly all survey respondents reported making one or more recommended changes. Fifteen people responded to the six month-post workshop evaluation for the March 2016 recall and traceability workshop and the April 2016 GAPs workshop (20% response rate of the 75 attendees)¹ and the table below gives the percentages who implemented different practices.

¹ We had a lower than normal response rate because though we did three pushes for the evaluation survey, we found out during the third push that there was a problem with the hyperlink for the first two pushes.

Recall and Traceability Workshop	% of Respondents reporting making change
Wrote a new recall plan or revised existing recall plan	43%
Wrote a new traceability plan or revised existing traceability plan	71%
Made changes to our traceability system (labels, record keeping, software, etc...)	43%
Created a crises team (Respondents may have been confused, as term was not explained on survey.)	0%
Trained workers in traceability, recalls or crises management (talking to press, etc...)	29%

Produce Safety Practice	% respondents implementing post-April GAPs workshop
Completed, revised, or added to a written produce food safety plan	80%
Trained workers in farm produce safety practices	60%
Installed hand-washing station	40%
Started taking or increased the frequency of water quality tests	20%
Changed irrigation practices	0%
Changed handling or cleaning procedures for harvest or packing containers	40%
Changed manure or compost management practices	0%
Improved record-keeping practices	60%
Started adding sanitizer to wash water	0%
Other practices not mentioned above	0%

Highlight the major successful outcomes of the project in quantifiable terms.

BENEFICIARIES

The **PHMT**, **Produce Portal**, and **Produce Safety workshops** benefit the approximately 1,026 to 1,282 farms growing fruits and/or vegetables in Vermont as well as producers in surrounding states. In particular, they benefit:

- Beginning farmers
- Farmers with aging infrastructure or equipment
- Farmers seeking to expand their scale or establish new markets or crops
- Farmers who will be subject to FSMA regulations or wholesale buyer recall and traceability requirements
- The approximately 350 members of the Vegetable and Berry Growers Association (VVBGA), who are the primary users of the UVM EXT Produce Portal

Eight Farmers in the pilot project benefitted from the **Post-Harvest Management Team** by receiving technical and business planning assistance in an integrated, coordinated fashion, resulting in better decision-making and reduced time spent communicating individually with service providers. Other

farmers will benefit from the “lessons learned” by service providers about using an interdisciplinary approach to infrastructure and post-harvest quality improvements.

The 80 or so farmers who participated in the **FSMA-Readiness Workshops** learned about produce safety regulations, how to write FSMA compliant produce-safety plans and Produce Traceability Initiative recall plans, and make handling changes to improve produce safety and quality on their farms.

Potential Multi-State and National Impact

The Northeast Center to Advance Food Safety (NECAFS) and the regional group it serves benefits from this project in two ways: 1) lessons learned from the Post-Harvest Management Team posted on the Produce Portal will be linked to the NECAFS clearing house, and searchable leading farm service providers and academic specialists in the region; and 2) because the Produce Portal and NECAFS were created by the same web developer, new functionality developed from this project can be used to improve the clearing house functionality.

UVM Ext collaborates regularly with food safety extension educators in our neighboring states. The Produce Safety Workshops were planned and promoted in coordination with UNH, UMASS, and Cornell Extensions so that farmers in NH, MA and NY can also participate.

LESSONS LEARNED

Post-Harvest Team Lessons Learned:

The following key lessons were learned from the PHMT’s collaborative process:

1. **A coordinated multidisciplinary team approach is the most cost-effective way** to support farmers with larger post-harvest improvement projects, such as new buildings, or wash/pack line redesigns. This team approach works because farmers integrate their myriad technical needs holistically, with minimum time wasted to identify, contact, and work with multiple providers separately.
2. **Farmers must take the lead and get the work done.** Improvement projects must be driven by motivated farmers with the ability and resources to follow through. In order to find these motivated farmers, and set the stage for project success, service provider teams must develop rigorous application and screening procedures.
3. **The minimum requirements** for a technical support team using the case management approach are:
 - **A dedicated coordinator** with a clearly defined role to support communication and help move the project toward completion. **A dedicated team**, formed with intention to support farmers project management and follow-through..
 - Shared communication: we recommend an email alias, shared by the team, where all team communication is cced and can be sorted by farm name.
 - Optional: Case management software or custom-written tagging rules integrated with an email alias allowing emails to be automatically sorted by farm or other priority search terms, and export and analysis of this sorted data. This promotes easy tracking of team communications, tasks completed and goals met.
 - Optional: kick off farm visits with the entire team—this helps to establish the support team.

4. **Specific Lessons learned:** Team consults revealed common technical support needs, and common best practices among farms, which in turn have helped support the creation of:
- Post-Harvest Improvement Case Studies (example attached and under development on UVM EXT's new Produce Portal (see screen shots below).
 - Several blog post and subsequent fact sheets authored by PHMT Agricultural Engineers, Chris Callahan and Andy Chamberlin, including linked fact sheets on these post-harvest essentials: [drains](#), [surfaces](#), [lighting](#), and [drying greens](#): "[Must-Have](#)" tools, and [washing equipment](#)

Unexpected Positive Outcomes of PHMT project:

There were two unplanned, mutually positive alignments of the PHMT project and other projects that will positively impact the Vermont produce industry. These were:

1. Three of the PHMT farms received Produce Safety Improvement Grants from VAAFM. This funding allowed these farms to move faster on their PHMT projects.
2. The PHMT case studies found a home on the new UVM EXT Produce Safety website. The UVM EXT Produce Safety website was outdated, being upgraded, and needed to find a new home. UVM EXT secured a modest seed grant from the NECAFS to begin development of this new website. Soon after, it became clear that this new web site would be a great place on which to share the PHMT lessons learned. The no-cost extension (NCE) leveraged unspent PHMT funds to create the case study lessons-learned functionality of the Product Portal

CONTACT PERSON

Hans Estrin, hestrin@uvm.edu, phone/text: 802 380 2109

ADDITIONAL INFORMATION

See attached Appendix for:

- PHMT Screening Rubric
- PHMT Application
- Example Mighty Food Farm complete case study
- Example of Mighty Food Farm "short" case study
- Slide-summary of PHMT Farm projects

Dissemination of PHMT Lessons learned:

PHMT case study lessons learned are being used to populate the UVM EXT "Produce Portal", which is scheduled "go live" this winter (currently the beta version is under development). This July-- September 2018 NCE was used to design and develop the following functionality to support crowd-sourcing case study functionality (Screen shots taken from <https://www.uvm.edu/extension/produceportal> work within a user account):

Screen shots showing design/branding and user interface improvements including better help text, consolidated dashboard, and new features to support crowd-sourced , searchable case study display.

Pete Land, Tamarack Media

Hans Estrin, UVM Extension

Log In Sign Up

Home Search About My Dashboard

the login form

Login

Why have an account? You can add your own content, save favorite resources or search criteria, and sign up to receive weekly notifications of new content.

USERNAME OR E-MAIL ADDRESS *



You may login with either your assigned username or your e-mail address.

PASSWORD *

The password field is case sensitive. [Forgot password?](#)

Log in

If you haven't registered [create an account now](#)



[Home](#) [Search](#) [About](#) [My Dashboard](#)

[Log In](#) [Sign Up](#)

weekly notifications of new content (send automatically via MailChimp)

New account

Why have an account? You can add your own content, save favorite resources or search criteria, and sign up to receive weekly notifications of new content.

If you already have an account, [log in now](#).

USERNAME *

Spaces are allowed; punctuation is not allowed except for periods, hyphens, apostrophes, and underscores.

E-MAIL ADDRESS *

A valid e-mail address: All e-mails from the system will be sent to this address. The e-mail address is not made public and will only be used if you wish to receive a new password or wish to receive certain news or notifications by e-mail.

☐ **SUBSCRIBE TO LISTSERV**

☐ **RECEIVE WEEKLY EMAIL NOTIFICATIONS OF NEW CONTENT**

FIRST NAME *

LAST NAME *

sample notification email

[View this email in your browser](#)



THE UNIVERSITY OF VERMONT
EXTENSION

The following content has been added to the [UVM Extension Produce Portal](#) over the past week. [Log in](#) to your account to save searches, mark favorites, or submit your own content. You can unsubscribe from these weekly updates via the link in the footer of this message.

[Test resource](#)
Existing Resource • Photos & Videos
Added by Jennifer Caritas on Oct 22, 2018 09:29 am

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mighty

the user dashboard welcome screen

My Dashboard Edit Profile Add/Manage Content Favorites Saved Searches

Welcome to your user dashboard. Use the tabs above to:

- edit your profile information (including username, password, email, notification subscription, etc.)
- add your own content to the website (or manage content you have already added)
- view your favorites (you can mark any resource as a favorite while browsing the portal)
- view your saved searches (you can save search criteria at any time while using the portal)

Basic Farm Description

FARM NAME

Mighty Food Farm

FARM CONTACT NAME

Lisa MacDougall

TOWN

Shaftsbury

STATE

VT

MAIN CROPS

Diversified 4-season lettuce/greens, Squash, Onions, tomatoes

List your top 3-5.

APPROXIMATE GROSS SALES

\$100,000-249,999

APPROXIMATE RATIO OF WHOLESALE VS. RETAIL SALES

50/50

Enter in this format: 60/40

APPROXIMATE ACRES IN PRODUCTION

10-50

APPROXIMATE NUMBER OF EMPLOYEES

7

new option to create a farm profile that can be automatically included with content added by the user

Expand the Basic Farm Description section to enter information that can be automatically applied to content you add to the site.



My Content

the user's favorites tab

My Dashboard Edit Profile Add/Manage Content Favorites Saved Searches

Questions? Email prportal@uvm.edu

ADD CONTENT

New Clean and Comfortable Wash/Pack Shed (Case Study)
Last updated: 10/29/2018 - 3:59pm
[View](#) | [Edit](#) | [Delete](#)

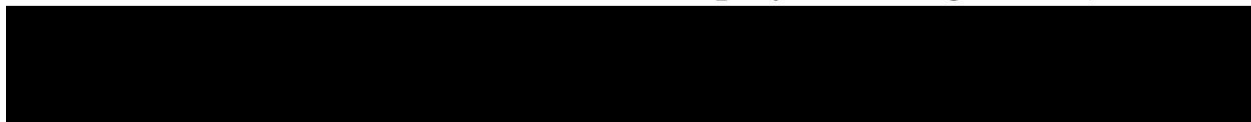


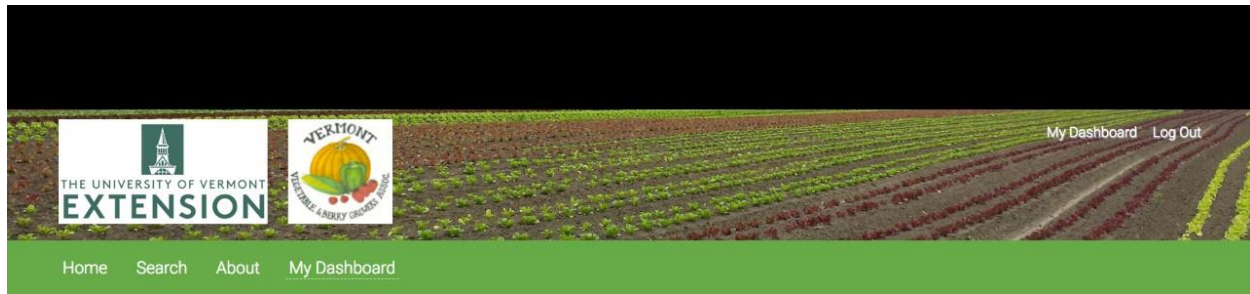
My Favorites

My Dashboard Edit Profile Add/Manage Content Favorites Saved Searches

Sunrise Farm Case Study (Case Studies & Examples)
Saved 10/29/2018 - 4:42pm
[View](#) | [Remove From Favorites](#)

the user's saved searches tab (second screenshot shows how that's employed during search)





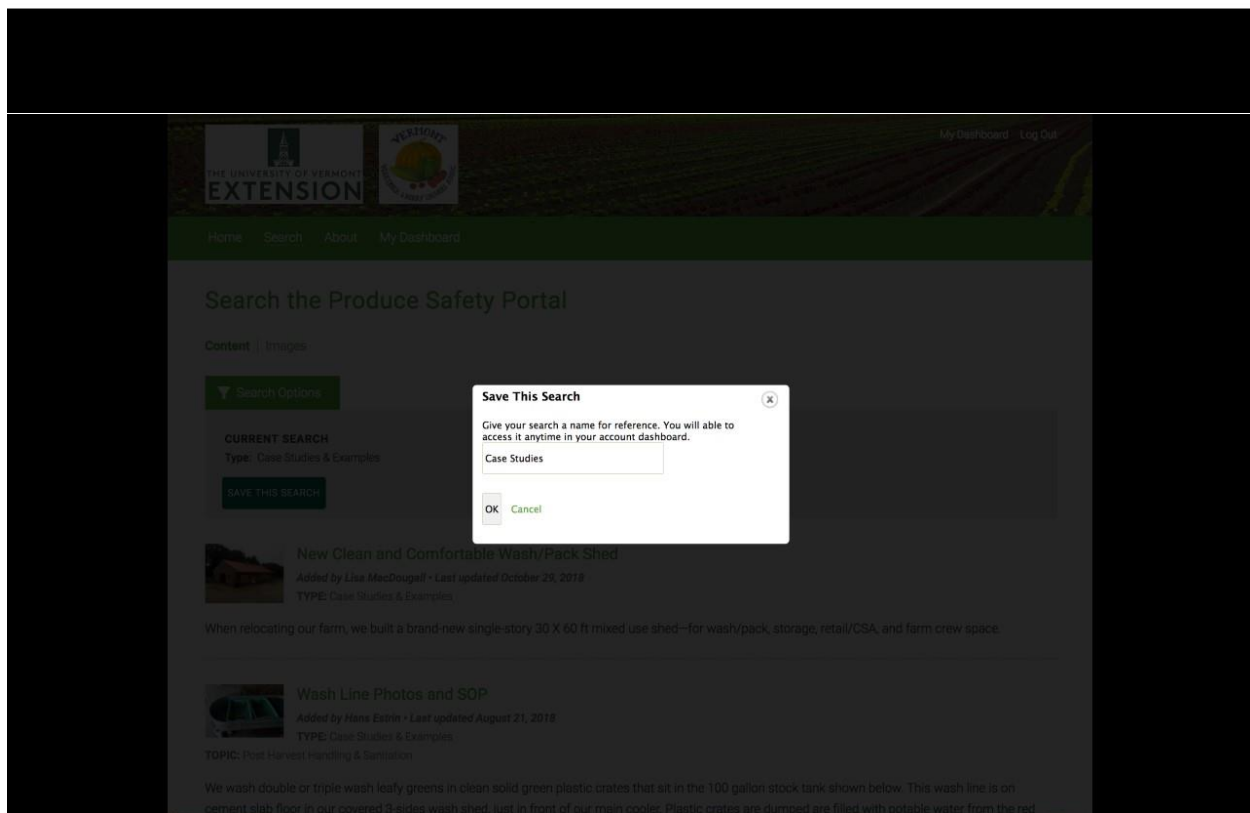
My Saved Searches

[My Dashboard](#) [Edit Profile](#) [Add/Manage Content](#) [Favorites](#) [Saved Searches](#)

Case Studies

Saved 10/29/2018 - 4:43pm

[View](#) | [Delete](#)





New Clean and Comfortable Wash/Pack Shed

[◀ RETURN TO SEARCH](#)
[SAVE TO FAVORITES](#)
[DOWNLOAD PDF](#)

the new case study template, including farm profile, option to download PDF, and annotated slideshow ("show and tell")

Mighty Food Farm (Shaftsbury, VT)

FARM CONTACT: Lisa MacDougall

MAIN CROPS: Diversified 4-season lettuce/greens, squash, onions, tomatoes

APPROXIMATE GROSS SALES: \$100,000-249,999

APPROXIMATE RATIO OF WHOLESALE VS. RETAIL SALES: 50/50

APPROXIMATE ACRES IN PRODUCTION: 10-50

APPROXIMATE NUMBER OF EMPLOYEES: 7

What did you do?:

When relocating our farm, we built a brand-new single-story 30 X 60 ft mixed use shed—for wash/pack, storage, retail/CSA, and farm crew space.

Why did you do it?:

We moved and had to build anew. In the old space, we spent 10 years slogging through every pack out ...the location and layout were poor—negotiating ice or slush with arms full and ducking through low doors—not enjoyable. So our primary motivation beyond efficiency was to make the pack-out process more enjoyable.

About how much did it cost?:

\$100,000 (\$55/ft²)

How did it help?:

The comfort, light, and well-designed space has increased crew efficiency, morale, and loyalty. It is easy to clean and dry, which has decreased food safety risk. The cleaner ample storage has increase product quality and longevity.

What are you most pleased with?:

Double overhead doors with large indoor shaded area.

Any mistakes or lessons learned?:

Building has no plumbing (besides frost-free hydrant and swale drainage) and no ventilation. Wish I had invested in these, especially ventilation.

Show and Tell:

Click any image to view an annotated slideshow.



Share This Resource:



How did it help?
The comfort, light, and well-designed space has increased crew efficiency, morale, and loyalty. It is easy to clean and dry, which has decreased food safety risk. The cleaner, ample storage has increase product quality and longevity.

What are you most proud of?
Double overhead door

Any mistakes or lessons learned?
Building has no place for a second person-door for retail and CSA access on the northwest corner.

Show and Tell:
Click any image to view it full screen.



The packshed has become the central "hub" of the farm boasting new, slab on grade construction with a large overhead door on the east side for receiving from field and packing out for market, person-door for crew access on the northeast corner, and a second person-door for retail and CSA access on the northwest corner.

1 of 7

Share This Resource

f t e s +

Project 5: Building the Demand for Fruits and Vegetables in Vermont Schools (Previously Accepted)

PROJECT SUMMARY

With this project the Northeast Organic Farming Association of Vermont (NOFA-VT) sought to increase the market for Vermont fruits and vegetables at public schools in Vermont by establishing a stronger connection between the USDA Fresh Fruit and Vegetable Program (FFVP) and 1) Vermont-grown fruits and vegetables and 2) nutrition and health curriculum requirements outlined in the Common Core and Next Generation Science Standards.

This project addressed two issues. First, whereas many school food programs around Vermont serve local foods in their cafeterias, a small subset of these programs provide education in the cafeteria in the form of taste tests, cooking opportunities, and farmer visits. And an even smaller subset has developed connections with classroom teachers who help to build understanding of the local foods through curriculum connections. Through our work, we know that by increasing education and hands-on experiences we can increase student acceptance of and willingness to try new foods. Currently, even though students are being offered more local produce with school meals, they are not necessarily eating significantly more.

The second issue addressed was even though funds from FFVP *can* be used to purchase local food, the reality is that most schools *are not* using them this way because the program has been marginalized to the food service realm and value isn't placed on using local produce across the school community. Therefore, the opportunity to use the program to highlight Vermont fruits and vegetables, and provide a marketing opportunity for Vermont fruits and vegetables, was being missed.

Since its pilot phase in 2002 the USDA Fresh Fruit and Vegetable Program (FFVP) has provided fresh fruits and vegetables to schools with a significant population of low-income children. The program ensures low-income children have increased access to fruits and vegetables by providing participating schools with funds to purchase and serve a variety of free fresh fruits and vegetables to all students during non-meal times. FFVP funding guidelines stipulate that *only* fruits and vegetables may be purchased with funds, therefore the proposed project does not increase the competitiveness of non-specialty crops. Further, fresh fruits and vegetables that are cooked must be limited to once a week and always as part of a nutrition education lesson. This makes FFVP a great fit for promoting Vermont specialty crops because students will become familiar with the look and taste of fruits and vegetables in their raw form, increasing the likelihood that they will draw associations to the foods in other settings.

This project was timely because the USDA released new guidelines in 2012 requiring schools that participate in the National School Lunch and Breakfast Programs to serve more and a greater variety of fruits and vegetables. Recent studies clearly show that the increased fruit and vegetable requirements are not contributing to increased food waste in schools. This does not mean that food waste is not a concern in our school cafeterias, but it does mean that the cause of food waste is something other than improving the nutritional quality of our school meals. Not surprisingly, food service directors are reluctant to spend additional money on any fruits and vegetables—Vermont-grown or otherwise—when the risk of it going to waste is considerably high. In order to increase purchasing of Vermont specialty crops, specifically fruits and vegetables, we needed to address this concern, which this project did by increasing student acceptability of these foods.

In previous work funded by the SCBGP we made some strides supporting food service personnel in sourcing and using Vermont fruits and vegetables in the FFVP. Most notably, they would share handouts

and fun local fruit and vegetable facts from *Farm to School: Highlighting Local Fruits and Vegetables*, the FFVP guide we created as a result of this funding, with teachers when serving any local fruit or vegetable through the snack program. What was missing from our previous model was supporting the receivers of the snack in the classroom, in other words, the teachers. Food service personnel are reluctant to spend money on produce that won't be positively received and presented by teachers. They also are not trained, nor have the time, to provide food and nutrition education to students themselves to make the local food being served relevant and meaningful. Even if they did, it would be a stand-alone activity rather than integrated into the curriculum.

In order to increase student demand, schools need to provide students with adequate exposure to and experiences with new foods. In order for teachers to be able to provide these opportunities in the classroom 1) these experiences need to have educational value, helping them meet their curriculum requirements, and 2) they need to feel confident about integrating food and nutrition education into their curriculum. The VT FEED project (Food Education Every Day) was in a unique position to build these connections because the project is a partnership of the Northeast Organic Farming Association of VT, a producer organization, with deep understanding of school meal programs, and Shelburne Farms, which provides teacher professional development related to sustainability and agriculture.

PROJECT APPROACH

GOALS: Increase the market for Vermont fruits and vegetables at Vermont public schools by—

- 1) Promoting the use of FFVP in classrooms
- 2) Facilitating the process for using Vermont produce in FFVP for school food programs and farmers.
- 3) Modeling standards-based lessons in the classroom using Vermont specialty crops.

Activities/Tasks	Objectives	Metrics	Results/Accomplishments
Identify schools with FFVP and teachers willing to pilot curriculum.	Build demand for VT fruit & vegetables by developing, modeling and promoting FFVP in classrooms.	5 schools each in Franklin and Bennington counties (10 total), 1 classroom in each school (10 total)	Six schools in Franklin County, with several classrooms each, and one school with all eight classrooms participated in Bennington County were willing to be part of this project. (Due to school consolidation concerns in most of the schools, principals were not willing to take on additional projects in Bennington County.)
Co-host 4 Farmer-Food Service Forums.	Provide opportunities to establish or grow relationships between schools and VT fruit & vegetable growers. Discuss purchasing opportunities.	2 Forums each in Franklin/Grand Isle and Bennington counties (4 total) Each participating school will expand or develop relationships with 2 specialty crop growers (20 total, some overlap)	20-30 buyers and sellers attended each of the forums. 10 responses to the buyer/seller forum surveys: <ul style="list-style-type: none"> • 80% (equal number of buyers and sellers) made successful connections: • 50% reported they had very interactive conversations with other buyers and sellers that have led to deeper relations. • Follow up after the forums: 80% followed up with phone calls or a meeting and several started new purchasing relationships. One institutional buyer commented, <i>"It was a great opportunity for us to meet local growers and establish a</i>

			<i>relationship to bring local produce into our kitchen."</i>
Provide technical assistance and tools to school food service on creating informal solicitation bids for FFVP 2016-2017.	Provide trainings with food service and farmers on local procurement techniques. Adjust FFVP snack menus to accommodate local produce availability. Facilitate development of solicitation bids and contracts.	5 schools each in Bennington and Franklin counties develop solicitation bids with 2 farmers each to supply VT fruits & vegetables for FFVP during the 2016-2017 school year.	<p>This process was slowed down due to staff changes in our Bennington County partner. New staff had to be trained on proper procurement resulting in only 2 schools attempting to develop solicitations. 5 schools in Franklin counties developed solicitations to supply VT fruits & vegetables for FFVP during the 2016-2017 school year.</p> <ul style="list-style-type: none"> • All reported that they successfully created the informal bid solicitation process to purchase additional local foods as a result of training provided by VT FEED and the Agency of Education Child Nutrition Program. • Schools are just starting to send solicitations to local farmers for spring or fall purchases.
Use VT fruits & vegetables in FFVP	Increase in amount of sales from partner farms to participating schools in Bennington and Franklin counties. Promote the use of FFVP in classrooms to increase student knowledge of and familiarity with new foods.	Increase the amount of local fruits & vegetables sold to 10 schools for use in FFVP from current level to 2/week in fall/spring and 1/week in winter. Determine baseline from purchasing records & track quarterly using TBD tracking tool.	<p>8 school food service directors responded to surveys:</p> <ul style="list-style-type: none"> • 25% reported that they increased the purchase of local F&V compared to the year before. • In Franklin County 6 schools are in the process of tracking specific crops using the Food Purchasing Data Tool we created. It includes a limited number of products that could be produced in large quantities in Vermont, and thus, could become substitutes for products from across the country.
Create sample lessons for classroom use	Connect FFVP to the Common Core (Literacy & Math) and Next Generation Science Standards increases the program's relevance to teachers. Motivates teachers to use FFVP because it helps address curriculum requirements through experiential learning.	Completed lessons in math, literacy, science Multiple grade levels addressed	<p>Teachers were surveyed to determine what sort of activities would be appropriate to accompany the fruit and vegetable snacks. Curriculum was created and 13 people were trained in their application.</p> <p>9 lessons in math, literacy, science were created (http://vtfeed.org/feed-resource-library)</p> <p>Primary, intermediate, and middle school grade levels were addressed in the curriculum supplement.</p>
Model sample lessons in participating classrooms	Demonstrate the potential of FFVP as a vehicle for teaching nutrition education while meeting curriculum requirements. Build the expertise and comfort level of teachers	5 classrooms and teachers each in Franklin and Bennington counties (10 total) participate in training.	<p>4 teachers and one FTS partner were trained in Franklin County and 7 teachers and 2 FTS partners were trained in one elementary school in Bennington County.</p> <ul style="list-style-type: none"> • 3 teachers were videotaped to model use of the lessons.

	with teaching food and nutrition education in the classroom.	Videotape modeling of lessons for use in statewide marketing campaign.	<ul style="list-style-type: none"> 8 teachers and the 2 FTS partners reported they would use the activities 2-5 times for the remainder of the school year.
Create marketing materials (including videos)	Demonstrate potential and value of: <ol style="list-style-type: none"> Using local fruits & vegetables in FFVP. Using FFVP to teach curriculum. 	Produce: <ul style="list-style-type: none"> Short video demonstrations Lesson plans 	Video created demonstrates the importance of teaching about fruits and vegetables: Highlighting Fruits and Vegetables in the Classroom 9 Curriculum Lessons were created and are in the revised Guide on the VT FEED website: http://vtfeed.org/feed-resource-library
Launch statewide marketing campaign	Provide outreach to farmers about marketing to schools. Provide outreach to FFVP schools about using local products and addressing curriculum needs.	Disseminate information through: <ul style="list-style-type: none"> VT FEED e-newsletter VT FTS listserv Farm to Plate Atlas VT FTS Network Workshop presentations for teachers and food service 	We have disseminated the revised Guide that includes the curriculum lessons, a seasonal fruit and vegetable availability chart, as well as the procurement solicitation tools thorough the listed networks and e-news. Our regional partners have conducted one-on-one and small group work sessions with food service to collect purchasing data, and to use the tools to develop procurement solicitations for local fruits and vegetables.
Contact pilot schools	How many teachers are implementing food and nutrition education in FFVP. To what degree the increase in local purchasing is being maintained?	Feedback from 10 participating schools and teachers. (60% will use)	Of the 9 teachers who responded to the survey, 78% stated they would continue to use these activities with the fresh fruit and vegetable snacks. NOFA-VT is preparing procurement solicitation templates for fruits and vegetables to make it easier for schools to buy local produce.

Overall Conclusions and Recommendations

This project was successful for several reasons:

- We limited our project to two Vermont regions so that we could provide consistent and frequent technical assistance to established regional partners (Healthy Roots Collaborative in Franklin/Grand Isle and Northshire Grows in Bennington counties).
- We trained, worked with, and provided support and resources to the two regional Farm to School partners/organizations who could provide consistent and frequent technical assistance to the schools and farmers in their areas.
- It takes more time than one might anticipate, but it is very important to establish a system of communication between the food service and the teachers. It is difficult for teachers to be ready with an activity for the fruit or vegetable snack without knowing what will be prepared. It is equally difficult for the food service to order a seasonal vegetable unless they are sure the teachers are going to encourage kids to try it through one of the veggie activities.
- We were able to fulfill most of the objectives because NOFA-VT has statewide connections with and respect from farmers, and has been participating in Farm to School initiatives with Shelburne Farms for 17 years. However, we were unable to meet our metric numbers due to the changing personnel, pressures, and chains of communication in schools. These are hard to plan for.

- We contracted with Shelburne Farms that has statewide connections with and respect from teachers to work with teachers to develop the connections to FFVP through the classrooms.
- The buyer-seller forums were successful because the regional partners organized them using their connections. While the deals made may be small, the regional partners established credibility and developed more relationships so that future buyer-seller connections will be more easily accomplished without a more formal meet and greet platform.

We identified Franklin and Bennington Counties for this project because we were already collaborating with Farm to School Partners, Healthy Roots Collaborative (HRC) and Northshire Grows (NSG), respectively. These existing relationships made it possible for us to both have a deeper impact, as well as, provided adequate follow-up support for the schools and farmers. In addition, because of their regional knowledge and connections, they were very successful getting buyers and sellers together each year of the project.

Shelburne Farms has been providing professional development and curriculum resources for teachers for decades on sustainability, food, and farm education. They are well respected nationally and have provided Common Core and Next Generation Science Standards for the current FFVP Guide so that teachers can readily access these when they are providing nutrition education related to the FFVP.

GOALS AND OUTCOMES ACHIEVED

See the above chart for specific activities and metrics. A summary of goals and outcomes for this project follows.

- 1) Facilitate the process for using Vermont produce. Establish or grow relationships between Vermont specialty crop growers and schools.
 - a. Northshire Grows conducted two farmer and food service forums in Bennington County, and Healthy Roots Collaborative conducted two in Franklin/Grand Isle Counties. All of these were successful-attended by 20-40 buyers and sellers at each forum and new relationships were established. However, it takes time and individual meetings to broker deals. In most of the nine buyer-seller purchasing relationships, there has been a focus on 1-2 specific products, such as watermelons, salad greens, tomatoes, and sweet potatoes. Farmers are concerned that each account does not amount to much product yet, but they were glad to meet a variety of buyers they previously had not known about, such as a summer camp on Grand Isle or the Northwest Medical Center in Franklin County. One school reported, *"It was a great opportunity for us to meet local growers and establish a relationship to bring local produce into our kitchen."*
 - b. As a result of this project in Bennington County, Maple Street School an independent school in Manchester, has been promoting FFVP in the curriculum, cafeteria and community. Local farms make lunch for 125 people every Thursday, teachers are working with local food in math and science curriculum and a new CSA program has purchased over \$3,000 worth of fruits and vegetables in 2017 from ten local farms.
- 2) Facilitate the local procurement process for schools, providing technical assistance and tools to help them develop a solicitation bid specifically for the FFVP.
 - a. We have successfully trained Healthy Roots Collaborative to do procurement training in Franklin/Grand Isle Counties. They are working with 6 schools. The training for solicitation procurement of local food has been most successfully done individually and by providing examples and consistent support. Therefore, this process is going slowly. According to a school wellness coordinator, before the interventions they were seeing veggies offered as part of FFVP snack once per week and now they are seeing them two times a week or more.

- b. Northshire Grows has had staffing changes and training to support schools in the procurement process was temporarily suspended. New staff has been hired and the training is proceeding in spring 2017. They raised awareness and participation in FFVP throughout the region. Though purchasing might not have blossomed yet, school did purchase some fresh fruit and vegetables and are motivated to do more. Participation takes many forms and this initial effort to raise awareness about FFVP and FTS in these schools has been successful and the schools are excited to make the work go deeper and further.
- 3) Demonstrate the potential of the Fresh Fruit and Vegetable Program as a vehicle for teaching nutrition education while meeting curriculum requirements.
 - a. By connecting FFVP to the Common Core (Literacy and Math) and Next Generations Science Standards it gains relevance to teachers. As can be seen in the marketing video, the teachers are motivated to implement the program because it helps address curriculum requirements through experiential learning.

The guide created with previous SCBGP funding has been revised and includes teacher-approved activities. Teachers found the activities using fresh fruits and vegetables, easy to use and relevant to their curriculum. Teachers reported that the students were successfully engaged in the activities and they were easy to use with their FFV snack. One teacher commented, *"I was a guest teacher and got to model the veggie/core subject connection for the para-professionals, teachers, and administrators in my school who were managing the classrooms. They too were very excited at how much the activities brought the veggies and the kids to life!"*

BENEFICIARIES

The specialty crop beneficiaries for this project are Vermont fruit and vegetable growers, which include growers in Bennington and Franklin/Grand Isle counties through distributors, aggregators, and direct sales. In some of the participating schools, existing purchasing relationships already existed. We expanded these as well as helped to develop new ones. In schools where purchasing relationships did not exist we supported school food service personnel in establishing them.

In the proposed project we provided one-on-one technical assistance to 8 schools. In the 4 buyer-seller forums we met 20–30 buyers and sellers. A few purchasing relationships were established. While the deals were small, the regional partners have established credibility and are finding that additional connections are being made more easily. (Additional information in the chart above.)

The specific data we were able to collect is from 5 schools in Franklin County. Before intervention, they were buying about 30 cases of apples from a distributor during the fall and 40 lbs. of winter squash from 1 local farm. We were unable to obtain the prices. The next fall the 5 schools purchased directly from 7 Franklin County farms, including apple orchards, and expanded purchasing to include 8 different fresh vegetables. Apple purchases increased to 40 cases, and a total of 670 pounds of local vegetables were purchased for that fall.

LESSONS LEARNED

It is important when working in a school system to establish rapport and relationships before working on new systems, new curriculum, or changes in purchasing procedures. While it seems that large numbers of teachers, food service or farmers were not influenced by this project during the grant period, relationships were started or strengthened and the stakeholders agreed that these connections will continue. Finally, while far-reaching school changes cannot be predicted when developing a project, the

success of this project was influenced by outside forces on the school districts, namely consolidation of school districts through the enforcement of Act 46. Thus, taking on new projects or systems was not a high priority for a number of the schools we wanted to work with.

We had planned to make 3 videos to demonstrate the fruit and vegetable lessons in the classroom. We learned that videotaping requires a lot of time to plan, set up, get footage that would be useable, and to edit! Thus, we only had funds for one video that incorporated a number of the activities and a number of the teachers.

CONTACT PERSON

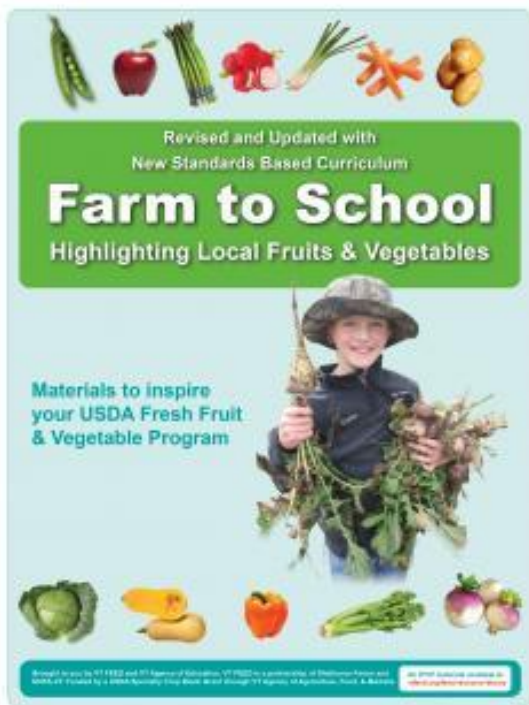
Abbie Nelson, 802-434-4122 x12, abbienelson@comcast.net

ADDITIONAL INFORMATION

This Guide was updated and created for schools participating in the Fresh Fruit and Vegetable Program (FFVP). It is relevant for anyone needing ideas for creating learning opportunities in the classroom around fresh fruits and vegetables. This is not only an opportunity to incorporate nutrition education in the classroom while providing a free healthy fruit or vegetable snack; it is also an opportunity to support your neighborhood farmer by buying local.

VT FEED website: <http://vtfeed.org/feed-resource-library>

Video: [Highlighting Fruits and Vegetables in the Classroom](#) and [Curriculum Lessons](#)



Project 6: Protecting the pure maple brand to enhance competitiveness and economic sustainability of the maple industry (Previously Accepted)

PROJECT SUMMARY

Maple syrup is one of Vermont's signature specialty crops, with a global reputation of superior quality. However, many commercially-produced foods attempt to align themselves with the pure maple brand by using the term "maple" and maple imagery on their packaging, but use imitation flavorings instead of real maple products. Each of these products represents a sales opportunity for maple producers, since each could be using pure maple in place of imitation flavors. Thus, the overall goal of the maple industry is to increase the number of products which use pure maple as an ingredient, and thus ultimately increase the size of the market and sales of pure maple products. To accomplish these goals will require increased awareness of this issue by consumers, and scientific data from consumer research about consumer understanding and preferences is needed to support the marketing and education efforts necessary to achieve this increased awareness. The objective of this project was to complete the preliminary work required to provide the foundation for these consumer research and education activities – to develop a comprehensive database of products that use the term "maple" but that do not contain pure maple products, and work with the maple industry to determine the target audience and the specific research questions to be examined in consumer survey research. This will provide the essential preliminary data and foundation necessary to conduct subsequent consumer research and education activities to accomplish the maple industry goal of increasing consumer awareness, and ultimately sales of pure maple products.

PROJECT APPROACH

To accomplish the project goals, first, research was conducted to compile a comprehensive database of products that use the term "maple" but that do not contain pure maple products, as well as products that do contain pure maple. In-store surveys of available products were conducted at 12 locations of 3 major retail grocery chains in Vermont (Hannaford, Price Chopper, Shaws), and 1 in Maryland (Martin's). In addition, surveys of products available in-store and online at national retailers Target and Walmart were conducted, as well as products available through online grocery retailers Amazon and Jet. A total of 86 products that used the term "maple" without containing pure maple were identified, while more than 170 products that did contain pure maple were identified. A searchable Excel database of product information (product name, manufacturer name and consumer contact information) was developed. A corresponding database of images of the products' front panels and ingredient statements was also created. These databases were provided to the Vermont Maple Sugarmakers Association (VMSMA) for use in education and marketing activities.

In addition, we also worked with VMSMA members and leadership to develop and refine the specific research questions that needed to be asked in consumer research, and to define the specific audience that should be targeted in that research. The VMSMA determined that a national consumer audience should be targeted, and that the following primary research questions should be the focus:

- Do consumers know what real maple is?
- Do consumers currently distinguish between products that do and do not contain real maple, and do they know how to distinguish between products that do and do not contain real maple?
- What attributes do consumers associate with the term "maple"?
- Do consumers expect real maple to be an ingredient in products that use the word "maple" in their names or flavor descriptions?

- What value do consumers place on real maple?

Finally, these data and information were used to support the preparation of an application to the Vermont Specialty Crop Block Grant Program to support the second phase of this work, to conduct the consumer research and subsequent education activities necessary to achieve the overall goals of increasing consumer awareness and sales of pure maple syrup.

GOALS AND OUTCOMES ACHIEVED

The project goals were to complete a comprehensive database of products that use the term “maple” but that do not contain pure maple products, and to work with the maple industry to determine the target audience and research questions to be examined in consumer survey research. These goals were completed. These data will be able to be used to conduct the subsequent consumer research and education activities necessary to achieve the longer-term outcomes of increasing consumer awareness and sales of pure maple products.

BENEFICIARIES

The Vermont Maple Sugarmakers Association (VMSMA), an organization that represents Vermont’s maple producers and packers, was the primary beneficiary of this project.

LESSONS LEARNED

The subsequent application submitted to the Vermont Specialty Crop Block Grant Program in early 2016 was not awarded. However, the VMSMA will be able to use the data compiled under this project for future work, including grant applications.

CONTACT PERSON

Dr. Abby van den Berg, (802) 899-9926, Abby.vandenBerg@uvm.edu

Project 7: Promoting Vermont Specialty Crops in Japan (Previously Accepted)

PROJECT SUMMARY

The goal of this project was to build demand for Vermont maple, hard cider, and other specialty crops in the Japanese market. According to Food Export-Northeast, “Japan is now the 3rd largest package food market in the world after the United States and China, which passed it in 2013. FAS Osaka reports that even with all the economic uncertainty, Japan continues to be one of the best opportunities in the world for U.S. exporters of food and agricultural products. In 2013, the United States exported US\$12.1 billion worth of agricultural products to Japan. The total food and drink market in Japan is huge, valued at around US\$810.8 billion. FAS suggests that if you have a quality product that meets the needs and wants of Japanese consumers, that can be produced and delivered competitively, and you have patience to research both the differences in consumer tastes and government regulations, you can build an attractive market position in Japan.”

Japanese consumers prefer specialty products that reflect the terroir of their place of origin, as well as “better-for-you” foods. Maple syrup, Vermont’s highest value specialty crop, reflects both of these characteristics, and Japan is the greatest importer of U.S. maple syrup after Canada (\$4.3 million). Other value-added specialty crop products such as ice cider also reflect Vermont’s unique geography and cultural heritage.

Vermont specialty crop producers who have started to explore the Japanese market have found that there would be value in enhancing consumers’ awareness of Vermont. Japanese consumers do have some awareness of Vermont: specific brand elements that are already well-known include fall foliage, *The Sound of Music*, Tasha Tudor, and Ben & Jerry’s. There is also a popular Japanese product called Vermont Curry, which has the reputation of being made of high quality ingredients including honey and apples. (Some consumers even believe these ingredients come from Vermont.) The objective of this project is to leverage these Vermont images and brands into increased appreciation of the state’s high quality specialty crop products.

Two conditions in the maple industry made this proposal especially timely: 1) increasing annual yields due to improved technology and more acres in maple production (most notably the Island Pond company installing 100,000 taps this year); and 2) proposed changes in maple grading laws that will standardize maple grades across state and international borders. There is great potential for other Vermont specialty crops as well.

This project relates to Goal 11 of the Vermont Farm to Plate Strategic Plan: “The majority of farms and food processing facilities will be profitable with a stable cash flow and increased returns to producers.” It addresses the Farm to Plate objective to “Provide at least \$100,000 in annual funding for the marketing of pure Vermont maple syrup to national and international markets.”

PROJECT APPROACH

VAAFM’s Business Development Section Chief Chelsea Lewis, Deputy Secretary of Agriculture and the Director of the Vermont Office of the U.S. Commercial Service, U.S. Dept. of Commerce led the Vermont delegation on the mission, which took place from October 24-28, 2016. Company participants were as follows:

- Vermont Harvest (specialty crop-based jams, jellies, preserves)
- Shacksbury Cider
- Smith & Salmon, Inc. d.b.a Sap! Maple Beverages

- Caledonia Spirits, Inc.
- Runamok Maple
- Sugar Bob's Finest Kind (smoked maple syrup)
- Dorset Maple Reserve
- Spring Brook Farm (cheese)

Mission activities included:

- Company visits to other Vermont companies currently doing business in Japan (Burton and Ben and Jerry's) to learn about the market and key Vermont brand elements to focus on with Japanese consumers;
- An intimate seminar for nine key food and beverage media writers and photographers, that gave these key influencers exclusive access to Vermont companies and an in-depth understanding of the story and use of each product;
- A "Taste of the Green Mountains" reception and tasting at a Farm-to-Table restaurant in Tokyo, which hosted 90 guests, including retail and wholesale buyers, importers, distributors, chefs and top ranking staff from USDA FAS and the U.S. Embassy;
- A store tour of six food retail outlets, from more budget-minded grocery stores, up to high-end specialty shops;
- A table top showcase during which each business had four to eight one-on-one meetings with buyers specifically matched to their product potential. Products were also prepared for guests during a special luncheon.

Spring Brook Farm was the only non-specialty crop participant. Approximately 15% of mission costs were covered by the Vermont Dairy Promotion Council, to ensure that no SCBGP funds benefitted this cheese producer. Significant program partners included Susan Murray from the U.S. Department of Commerce and Food Export-Northeast, our State Regional Trade Group. We worked closely with Food Export program staff to ensure that there was no overlap between what Market Access Program funds could cover, and what was covered by SCBGP.

GOALS AND OUTCOMES ACHIEVED

The goal of this project was to increase sales of Vermont specialty crops to Japan.

Only one of the mission participants had any sales to Japan, and the amount was very small (less than \$10,000 USD per year). We surveyed participants using Food Export-Northeast's well-established survey tools immediately after the trip, and will follow up in October to see if any additional sales have been realized.

Our target was an increase of \$20,000 in actual sales during the trade mission, and an increase of \$200,000 by the end of the three-year grant period, and a \$500,000 in sales projected within the next five years. In the post-trip survey, participants estimated \$70,000 in projected sales because of the trade mission. They cumulatively reported making 52 new buyer contacts. 100% of participant said the trip was a good value for their investment.

BENEFICIARIES

The seven specialty crop producers who attended the mission were the primary beneficiaries. These businesses source from dozens of Vermont and U.S. specialty crop producers, so the impacts across the supply chain are significant.

LESSONS LEARNED

While many Japanese consumers may not yet be familiar with the Vermont brand, the product attributes they are looking for align well with what Vermont has to offer: high-quality, healthy, organic, and beautifully packaged food and drink are in demand. It takes a long time for business relationships to develop in Japan, and while introductions were made, it will be months or years before sales are actualized. Additionally, the strength of the US dollar is negatively impacting exporters.

The USDA Market Access Program and our State Regional Trade Group is critical to the success of Vermont's emerging exporters. Without Branded funds to cover 50% of travel expenses, and the support of Food Export-Northeast's In-Market Representative, this activity would not have been possible.

CONTACT PERSON

Chelsea Bardot Lewis, Business Development Section Chief | 802-522-5573 | chelsea.lewis@vermont.gov

ADDITIONAL INFORMATION

[Mission website](#) (archived)

[Press release and Agriview article](#)

Additional attachments, below:

- Agenda and participant list
- Event invitation
- RSVP sheet



AGENCY OF AGRICULTURE, FOOD & MARKETS

State of Vermont Agriculture and Food Trade Mission to Japan

October 24-28, Tokyo

Participants

Government Officials:

Deputy Secretary, VAAFM – Head of Mission

Business Development Section Chief, VAAFM

Director of the Vermont Office of the U.S. Commercial Service, U.S. Dept. of Commerce

Industry Representatives:

Vermont Harvest

Shacksbury Cider

Spring Brook Farm

Smith & Salmon, Inc.

Caledonia Spirits, Inc.

Runamok Maple

Sugar Bob's Finest Kind

Dorset Maple Reserve

Japan Contractor: R & L Associates Co., Ltd.

Agenda

Monday, October 24

Arrive Intercontinental Tokyo Bay

Tuesday, October 25

9:30-noon Prepare for Experience Vermont event program and presentation
12:05 Board bus for lunch
12:30-14:20 Lunch at Ukai Tofu Restaurant Shiba
14:30 Depart Ukai restaurant by microbus
14:50-15:30 Meet with representatives from Burton Snowboards to learn more about the Japanese market and Vermont brand identity
15:45-16:30 Meet with representatives from Ben and Jerry's to learn more about the Japanese market and Vermont brand identity
Evening Optional group dinner

Wednesday, October 26

10:30 Depart Hotel for Bistro Barnyard Ginza
11-13:15 Prepare for Experience Vermont Session
13:15 Media arrival and registration
13:30-14:45 Roundtable media session for about 15 Japanese trade media people and Vermont mission members (3 minutes per company)
14:45 Guest arrival and registration
15:00-16:20 Experience Vermont: A Taste of the Green Mountains Seminar
15:00 Opening by R & L Associates Co., Ltd.
15:02 Welcome address by Director of ATO Japan
15:05-15:15 Remarks by Deputy Secretary, Vermont Agency of Agriculture (Head of Mission)
15:15-15:20 Remarks by Director of the Vermont Office of the U.S. Commercial Service
15:20-15:40 Company and product overview
15:40-15:55 Celebrity Vermont Chef will be introduced, and he will highlight short introduction of Vermont regional cuisines in his successful restaurant
15:55-16:10 Grand chef of bistro Barnyard Ginza will speak about his impression of the Vermont products and his Vermont product featured menus
16:10-16:20 Break
16:20-18:30 Networking reception
16:25 *Kampai toast by Minister-Counselor of Ag Affairs, American Embassy to Japan
16:35-16:50 Flair bartending performance
17:00-17:10 Ben & Jerry's team arrives
Quick speech to highlight B&J ice-cream success story globally and in Japan
Second Kampai toast with the small scoop of B&J ice cream
Vermont-inspired bBG style B&J ice cream parfaits will be ready to go
17:10-17:50 Networking dinner goes on
17:55 VAAFM Deputy Secretary offers thank-you-for-coming and for everyone now becoming the honorable members of beautiful Vermont community in Japan!
18:00 See the guests off at the gate. Hand over the gifts
18:30 Clean up
18:30-20:00 Vermont event wrap-up group dinner

Thursday, October 27

9:00-11:30	Market Briefing
11:30-16:30	Store tour (returning time may change depending on traffic and other issues)
18:00	Group Dinner

Friday, October 28

9:00-10:00	Preparation
10:00-14:30	One-on-one meetings (closed to all except companies and buyers)
14:30-16:30	Showcase (venue open to all invited guests)
16:30-17:00	Food Export wrap-up meeting
17:00-17:30	Cleanup
18:30	Group dinner and closing reflections



Office of the Secretary
Agency of Agriculture, Food and Markets
116 State Street
Montpelier, Vt 05620-2901

802-828-5667

30 September 2016

Greetings,

As part of the upcoming Vermont Trade Mission to Japan, I cordially invite you to "Experience Vermont: A Taste of the Green Mountains" on Wednesday, October 26 from 3:00pm to 7:00pm at Barnyard Bistro Ginza.

The event will feature Chef Shino and Sommelier Soma of Bistro Barnyard Ginza, and Bartender Yabuki of Barrel Inc., who will demonstrate new uses for Vermont's high quality and sustainable products, including pure maple syrup and maple products, artisan cheese, top shelf spirits and ciders, and small-batch jams, jellies and sauces.

The seminar will be followed by a tasting reception, where I will be joined in offering remarks by Susan Murray, Director of the Vermont Export Assistance Center for the U.S. Department of Commerce. The event will provide an exclusive opportunity to taste some of Vermont's most innovative and delicious food and drink, and set the stage for long-lasting trade relationships.

The Japanese invitation letter is attached for the further details on this exciting event. We would appreciate an **RSVP by October 14, 2016** to the R & L Associates by emailing info@rlassociates.co.jp.

I look forward to meeting you in person very soon.

Kind regards,

A handwritten signature in blue ink that reads "Jolinda H. LaClair".

Jolinda LaClair
Deputy Secretary
Vermont Agency of Agriculture, Food and Markets

The State of Vermont is an Equal Opportunity/Affirmative Action Employer and Provider





2016 年 9 月吉日

米国バーモント州食品・飲料セミナー、トレードレセプション開催のご案内

Experience Vermont

*A taste of the Green Mountains * * * Seminar & Networking Reception*

日本の食品、飲料業界並びにメディア関係者の皆様方、こんにちは。

私共、アメリカ合衆国バーモント州政府農業食品市場開発庁は、来る 10 月下旬に初の訪日ミッションを組み、同州の食品・飲料製品を日本市場に紹介し、対日輸出振興をはかるための公式 PR イベントを主催する運びとなりました。つきましては、2016 年 10 月 26 日(水)に下記の通り日本の食品飲料関連業界並びにプレス関係者様向けの 'Experience Vermont: A taste of the Green Mountains' セミナー及びトレードネットワーキングレセプションを開催することとなりましたので、ここに謹んでご案内申し上げます。

本イベントは、主にメディア関係者様向けのプレリユード、引き続きましてバーモント食品・飲料トレードセミナー、そして試食・試飲会を兼ねたトレードレセプション、の3部構成となっております。プレリユードではこの度来日をするバーモント州の企業メンバーたちによる PR と同州特産の食品と飲料のペアリング、セミナーでは、今回のミッションを率いて参りますアメリカ連邦商務省とバーモント州政府農業食品市場開発庁によるプレゼンテーションを行います。セミナーの後半では、イベント会場となる *bistro Barnyard Ginza* のシェフによるバーモントをフィーチャーしたオリジナルメニューのご紹介、*Barrel Inc.* の矢吹氏によるフレイバーテイスティング、ソフト & ハードドリンクカクテルのご紹介が行われ、その後のレセプションでは、セミナーで紹介されたお料理やお飲み物をご参加者の皆様方に実際に味わっていただくことになっております。

バーモント州は、アメリカ合衆国第14番目の州としての長い歴史と文化を誇り、美しく清冽な大自然に恵まれ、知性と感性、そして創造性に溢れる生産者たちが作り続ける、美味しくて品質の高い数々の食品、飲料製品がございます。是非この機会に同州産品の素晴らしさを日本の皆様方に知っていただき、本イベントを通じてアメリカのバーモント州をより身近に感じて頂ければ幸いです。

皆様におかれましてはご多忙中大変恐縮ではございますが、万障お繰り合わせの上、是非来臨賜りますよう、米国バーモント州ミッションメンバー 同心よりお願い申し上げます。

バーモント州政府農業食品市場開発庁
副長官 ジョリンド・ラクレア

お 記 事

Experience Vermont: A Taste of the Green Mountains

主催	バーモント州政府 農業食品市場開発庁		
後援	駐日アメリカ大使館農産物貿易事務所 ATO 東京		
日時	2016 年 10 月 26 日(水) *受付開始: 午後1時15分		
	午後1時半~午後2時45分	プレリユード	*メディア関係者向け特別セッション
	午後3時~午後4時30分	バーモント州食品・飲料セミナー & プレゼンテーション	
	午後4時40分~午後6時	トレードネットワーキングレセプション	
会場	bistro Barnyard Ginza/ビストロバーンヤードギンザ ホームページ: www.barnyard.jp 〒104-0061 中央区銀座 1-8-19 キラリトギンザ 7F 電話 03-6228-7400		
ご参加費	無料		

紹介製品(予定): *バーモント州特産メイプルシロップ製品各種、ジャージー牛乳製チーズ、メイプルシロップソーダ、バーモント産ハードサイダー、グルテンフリー・フルーツジャム各種、バーモント産ハチミツワッカ、ハニー・ジン

※ 尚、準備の関係上、大変お手数ではございますが、ご欠の回答を添付の返信用紙にて本イベント開催事務局(株式会社アールアンド エル アソシエイツ・担当: LEE)宛に e-mail (info@rassociates.co.jp)、もしくは FAX で **10 月 14 日(金)**までにご返信くださいますようお願い申し上げます。

E-mail / FAX 返信シート

To: *Experience Vermont*: A Taste of the Green Mountains イベント開催事務局宛

E-mail: info@rlassociates.co.jp *ファクス: 03-3560-1813

2016 年 10 月 26 日(水)開催

米国バーモント州食品・飲料セミナー、レセプション

ご出欠確認票

誠にお手数ですが、下記ご参加パートへのチェックと必要事項をご記入の上、

2016 年 10 月 14 日(金)までに上記返信宛先まで本シートをお送りくださいますようお願い致します。

- ☐ 13:30-14:45 プレリユード*メディア関係者向け特別セッション
- ☐ 15:00-16:30 バーモント州食品・飲料セミナー&プレゼンテーション
- ☐ 16:40-18:00 ネットワーキングレセプション

御社名 _____

御担当部署・役職 _____

ご担当者名 _____〈ご氏名英文綴り〉

〈ご同行者・代理ご出席者名〉 _____〈英文綴り〉

ご連絡先 Tel: _____ Email: _____

*複数名のご出席の場合は恐れ入りますが上記空欄にご参加予定者を御記名下さいようお願い致します。

Experience Vermont: A Taste of the Green Mountains

米国バーモント州食品・飲料セミナー、レセプション

主催	バーモント州政府農業食品市場開発庁
日時	2016 年 10 月 26 日(水) *受付開始: 午後1時15分
	13:30-14:45 プレリユード
	15:00-16:30 セミナー & プレゼンテーション
	16:40-18:00 トレードレセプション
会場	bistro Barnyard Ginza/ビストロバーンヤードギンザ ホームページ: www.barnyard.jp
	〒104-0061 中央区銀座 1-8-19 キラリトギンザ 7F 電話 03-6228-7400

*ご来場の際には本状をご持参もしくは受付に御提示下さい。

#	Company	会社名	Title	Industry type
1	The Daily Minato	みなと新聞	Tokoy Branch Director	Food Industry Newspaper
2	The Daily Minato	みなと新聞	Editorial Staff	Food Industry Newspaper
3	Ryutsu Journal	流通ジャーナル	Editor-in-chief	Retail trade Newspaper
4	Tokyu Agency	東急エージェンシー	Account representative	Consumer media
5	Wines, Spirits, Provisions News	食料醸界新聞	Deputy Director	Major alcoholic beverages/food Trade Newspaper
6	Tokyo Food Machinery Company	東京食品機械株式会社	Manager	Food technology and machinery company
7	Ecole de Cuisine Egami	江上料理学院	Managing Director	Renowned cooking school in Japan
8	Sixteen Co., Ltd.	株式会社Sixteen	CEO	Gourmet nuts and fruits distributor
9	Sixteen Co., Ltd.	株式会社Sixteen		Gourmet nuts and fruits distributor
10	Nikkei Inc.	日本経済新聞社	Digital Biz Planner	Japan's #1 economic journal
11	Mynavi Corporation	マイナビ	Digital Biz Creator	A major newspaper publisher's digital PR /Ad/Marketing Company
12	New England Tourism Office		Japan Representative	US State Tourism office
13	Growup Co., Ltd.	株式会社グローアップ	Assistant Manager	Print and Electronic media for bakeries
14	ATO Japan's Myfood.jp	ATO Japan's Myfood.jp	PR Director	Web marketing and PR specialist
15	ATO Japan's Myfood.jp	ATO Japan's Myfood.jp	PR Manager	Web marketing and PR specialist

#	Company	Title	Industry type
1	AD Project Co., Ltd.	PR Director	ATO's PR & Promotion agency
2	AD Project Co., Ltd.	PR specialist	ATO's PR & Promotion agency
3	AD Project Co., Ltd.	PR specialist	ATO's PR & Promotion agency
4	AD Project Co., Ltd.	Food Coordinator	ATO's PR & Promotion agency
5	American Airlines Group Inc.	Sales Planning Specialist	Airline company
6	American Airlines Group Inc.	Marketing Analyst	Airline company
7	ATO Japan's Myfood.jp	PR director	Web marketing and PR specialist
8	ATO Japan's Myfood.jp	PR Manager	Web marketing and PR specialist
9	Ben & Jerry's	Head of Retail	Ice cream maker
10	Ben & Jerry's	Global Retail Operation Manager	Ice cream maker
11	Bourbon Co. Ltd. http://www.bourbon.co.jp/company/english/index.html	Int'l Sales Director	Japan's major food/snacks/sweets/beverage manufacturer
12	Bourbon Co. Ltd.	International Sales	Japan's major food/snacks/sweets/beverage manufacturer
13	Colowide Co., Ltd. http://www.colowide.co.jp/en_us/	Merchandiser	Major operator of pub and dining restaurant chains

14	Daisho Corporation	CEO	Hospitality
15	Discover New England Japan Office	Representative	US tourism office
16	Doremi of Tokyo	Managing Director	Food Service
17	Ecole de Cuisine Egami	Managing Director	Renowned cooking school in Japan
18	Edific Inc. http://www.naturaledific.com/english	Vice President	Organic food and beverage importer & distributor
19	Growup Co., Ltd.	Assistant Manager	Print and Electronic media for bakeries
20	H.Yamamoto Shoten Co., Ltd. http://www.h-yamamoto.co.jp	Product Development Dir.	One of the oldest Japan's gourmet & natural food/beverage importer/distributor/retailer
21	Hori Corporation/Kitchen Garden	Vice President	Gourmet & Natural food & grocery retail chain, e-commerce
22	Island Co., Ltd.	Recipe Blog Producer	Media
23	Japan Dietetic Association	Cooking instructor	Independent food expert, cooking salon owner
24	Japan Dietetic Association	Cooking instructor	Independent food expert, cooking salon owner
25	Japan Dietetic Association	Cooking Expert	Independent food expert, cooking salon owner
26	Japan Dietetic Association	Cooking Expert	Independent food expert, cooking salon owner
27	Japan Dietetic Association	Cooking Expert	Independent food expert, cooking salon owner
28	Japan Dietetic Association	Cooking Expert	Independent food expert, cooking salon owner
29	Japan Green Tea Co., Ltd. http://jp-greentea.co.jp/english	CEO	Gourmet & Natural Food Importer, Distributer
30	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
31	Japan Vegetable Sommeliers Assn	Cooking Expert	Independent food expert, cooking salon owner
32	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
33	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
34	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
35	Japan Vegetable Sommeliers Assn	Cooking Expert	Independent food expert, cooking salon owner
36	Japan Vegetable Sommeliers Assn	Cooking expert	Independent food expert, cooking salon owner
37	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
38	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
39	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner
40	Japan Vegetable Sommeliers Assn	Cooking instructor	Independent food expert, cooking salon owner

41	La Jolla	CEO	Hospitality, life style advisor
42	Mynavi Corporation	Digital Biz Creator	A major publisher's digital PR /Ad/Marketing Company
43	Nikkei Inc.	Digital Biz Planner	Japan's #1 economic journal
44	Oishii Kenko Cook Pad http://cookpad.com	PR Director	Japan's #1 on-line recipe intro website
45	Pearl & Lotus Inc.	Cooking expert	
46	Professional Boulanger Pâtissier	Directeur	Pâtissier
47	RedSeal Inc.	Country Manager	Digital Security
48	RedSeal Inc.	Sr. Consulting Engineer	Digital Security
49	Royal Airport Highway Foodservice Co. http://www.royal-ahf.jp	Product Development Mgr	One of the major national restaurant chain operators for the commercial airport terminals and highway service facilities
50	Royal Holdings Co., Ltd. http://www.royal-holdings.co.jp/en/	Assistant Purchasing Mgr.	Major catering/foodservice/hospitality company
51	Ryutsu Journal	Editor-in-chief	Retail trade Newspaper
52	dancyu magazine 100 gourmet committee http://www.president.co.jp/dan/new/	Chef	Independent workshop for chefs and food experts
53	dancyu magazine 100 gourmet committee	Cooking expert	Independent workshop for chefs and food experts
54	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
55	dancyu magazine 100 gourmet committee	Cooking instructor	Independent workshop for chefs and food experts
56	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
57	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
58	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
59	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
60	dancyu magazine 100 gourmet committee	Cooking expert	Independent workshop for chefs and food experts
61	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
62	dancyu magazine 100 gourmet committee	Cooking expert	Independent workshop for chefs and food experts
63	dancyu magazine 100 gourmet committee	Chef	Independent workshop for chefs and food experts
64	dancyu magazine 100 gourmet committee	Sake sommelier	Independent workshop for chefs and food experts
65	dancyu magazine 100 gourmet committee	Food expert	Independent workshop for chefs and food experts
66	dancyu magazine 100 gourmet committee	Food expert	Independent workshop for chefs and food experts

67	dancyu magazine 100 gourmet committee	Cooking instructor	Independent workshop for chefs and food experts
68	dancyu magazine 100 gourmet committee	Cooking instructor	Independent workshop for chefs and food experts
69	Shino's Cooking Network	Cooking Expert	Independent food expert, cooking salon owner
70	Sixteen Co., Ltd.	CEO	Gourmet nuts and fruits distributor
71	Sixteen Co., Ltd.		Gourmet nuts and fruits distributor
72	The Daily Minato	Tokoy Branch Director	Food Industry Newspaper
73	The Daily Minato	Editorial Staff	Food Industry Newspaper
74	Tokyo Fod Machinery Company	Manager	Food technology and machinery company
75	Tokyu Agency	Account representative	Consumer media
76	UEDA Korean Dining	Managing Director	Food Service
77	Unilever Japan Customer Marketing K.K. /Ben & Jerry's Japan	Assistant Brand Manager	Ice cream marketing and sales
78	US Embassy ATO Japan	Officer	US Government
79	US Embassy ATO Japan/OAA	Deputy Directr	US Government
80	US Embassy ATO Tokyo	Marketing Specialist	US Government
81	US Embassy ATO Tokyo	Marketing Specialist	US Government
82	US Embassy ATO Tokyo	Marketing Specialist	US Government
83	WDI Corporation http://www.wdi.co.jp/index_en.html	Sr. Manager of Purchasing	Major foodservice chain operator (Hard Rock Café, Tony Roma's, California Pizza Kitchen, Grand Central Oyster Bar & Restaurant, Eggs 'n Things, etc.)
84	WDI Corporation	Purchasing and Marketing	
85	Wines, Spirits, Provisions News	Deputy Director	Major alcoholic beverages/food Trade Newspaper
86			Food specialist
87		Food writer for craft cider	Independent food journalist
88		Food writer for craft cider	Independent food journalist
89	PGN Co., Ltd.	CEO	Professional sports players management agency
90	Japan Vegetable Sommelier Association	Cooking instructor	Independent food expert
91	The Sankei Shinbun Newspaper Co.	Sales Department	One of the major print and electronic media companies/TV
92	The Sankei Shinbun Newspaper Co.	Sales Department	One of the major print and electronic media companies/TV
93	Baycrew Co., Ltd.	Flavor Works	Popular Pancake restaurant chain (12 locations in eastern Japan)
	VAAFM	Deputy Director	
	VAAFM	Business Development Mgr	
	US Department of Commerce	Director of Vermont Office	
	Vermont Homemade Memories LLC		
	Vermont Homemade Memories LLC		

	Shacksbury Inc.		
	Spring Brook Farm		
	Smith & Salmon, Inc.		
	Smith & Salmon, Inc.		
	Caledonia Spirits, Inc		
	Runamok Maple		
	Runamok Maple		
	Sugar Bob's Finest Kind		
	Dorset Maple Reserve		
	Dorset Maple Reserve		
	SoLo Farm & Table		
	R & L Associates Co., Ltd.	Contractor	
	R & L Associates Co., Ltd.	Contractor	
	R & L Associates Co., Ltd.	Contractor	
	Simul International	Translator	
	Simul International	Translator	

Project 8: Development of a Vermont Produce Safety & Market Access Program (Previously Accepted)

PROJECT SUMMARY

Food safety is a paramount issue facing Vermont fruit and vegetable growers. Producers want to grow safe and healthy food that consumers demand and that protects the quality reputation and brand associated with Vermont agriculture. A growing number of wholesale and retail customers seek assurance that food safety practices are being followed by all farms they purchase from. More than ever, customers are aware of where their food comes from and demand connection to the local growers that represent Vermont's community-based agriculture system. Many producers—regardless of total sales or customer base—have indicated to the Vermont Vegetable and Berry Growers Association (VVBGA) their willingness to participate in food safety planning and implementation of on-farm produce safety practices. The sentiment is that food safety is essential on all farms, of all sizes, as it influences market access, impacts economic development within the agricultural sector, and represents Vermont's prominence around value, quality, and brand. Vermont's previously largely unregulated produce industry has responded to the increase in produce safety awareness by voluntarily engaging in activities that lead to the development of food safety plans, seeking U.S.D.A. Good Agricultural Practices (GAP) certification, or participation in the Vermont Vegetable & Berry Growers Association (VVBGA) Community Accreditation for Produce Safety (CAPS) program. The development of a state-level produce safety program to support market access and meet federal expectations became increasingly important and time sensitive after the final Food Safety Modernization Act (FSMA) rules for Produce Safety and Preventive Controls were published in 2015.

The purpose of this project was to develop a state-level produce safety program that offers market opportunity for all Vermont produce growers, provides regulatory oversight to the 200 +/- "covered" operations (produce farms that must meet all FSMA Produce Safety Rule requirements), and preserves consumer confidence in Vermont's food products. The Vermont Agency of Agriculture, Food & Markets (VAAFM) worked with U.S. Food & Drug Administration (FDA) officials and leadership within the National Association of State Departments of Agriculture (NASDA) to develop final FSMA rules that can accommodate the unique needs and geographic variability of specialty crop producers in the northeast. This SCBGP project furthered VAAFM staff's capacity to create the framework for a state-level produce safety program that focuses on outreach, education, and technical assistance to help producers gain compliance with regulations through collaboration with FDA, University of Vermont (UVM) Extension, and the fruit and vegetable industry.

Vermont's produce industry encouraged the Vermont Agency of Agriculture, Food and Markets (VAAFM) to develop a food safety program that encompasses education, training, and technical assistance to achieve compliance prior to regulatory enforcement. Through a previously-funded SCBGP project (awarded in 2014), VAAFM worked to develop a framework, statutory authority, and program funding to engage with our state's fruit and vegetable industry. We created a VAAFM Produce Safety Program Coordinator position in January 2015 to provide outreach to the produce industry, partner with established service providers, engage in the legislative rule-making process, and collaborate with regional and federal partners. This position was responsible for analyzing National Agricultural Statistics Service (NASS) 2012 data to estimate the number of farms in Vermont growing produce and survey Vermont's specialty crop producers and processors to determine FSMA impact. This also position created the foundation of a produce program within VAAFM, secured Vermont's position on the national front around FSMA, and established in-state relationships with produce safety stakeholders.

Under this project, this position continued to build and strengthen in-state relationships with UVM Extension and the Vermont Department of Health, sought feedback on state program concept from industry representatives, engaged in the legislative process around new regulations, and developed a Vermont produce safety program that captures the needs of the producers and consumers within our state while aligning with FSMA requirements and state regulations.

VAAFM collaborated with Vermont Department of Health (VDH), the Vermont State Legislature, NASDA, FDA, UVM Extension, and industry association groups including the Vermont Vegetable and Berry Growers Association (VVBGA), the Vermont Tree Fruit Growers Association (VTFGA), and the Northeast Organic Farming Association of Vermont (NOFA-VT) throughout this project.

PROJECT APPROACH

Produce safety remains of growing concern to fruit and vegetable operations, the regulatory community, and consumers as a result of the federal Food Safety Modernization Act (FSMA), signed into law in 2011. Specialty crop producers want to provide safe and healthy food that consumers demand and that protects the quality reputation associated with Vermont's agricultural brand. Wholesale customers are increasingly demanding some food safety certification or accreditation, and overall consumers are more aware of where their food comes from and the practices employed to bring it to their dinner table.

The Vermont produce safety program, now known as the Vermont Produce Program, offers food safety education, training, and regulatory assistance to meet FSMA requirements in order to increase market access and provide economic viability to the fruit and vegetable industry. Program development included engagement with stakeholders and specialty crop producers to understand industry needs and the potential economic impacts of FSMA on produce businesses within the state. The Produce Safety Program Coordinator position provided VAAFM with staff capacity to further relationships with UVM Extension, VVBGA, Vermont Department of Health, other states, NASDA, and FDA. Improved collaboration across the state, the region, and the country has and will continue to have positive impacts on the development of a viable Vermont Produce Safety Program and compliance with FSMA regulatory requirements.

In September 2015, our Produce Safety Program Coordinator began seeking specialty crop industry feedback on a proposed produce safety program, worked with VAAFM and legislative legal counsel to draft statutory language to provide VAAFM with the authority to implement the FSMA Produce Safety Rule, and initiated discussions with VDH on implementation of the FSMA Preventive Controls rule.

This second phase of program development allowed for increased state and federal partnerships and improved communication within Vermont and amongst states regarding FSMA. Although VAAFM was aware that a segment of Vermont's fruit and vegetable industry would be responsive to a state-level produce safety regulatory program, we lacked industry perspective on legislative and regulatory recommendations and program structure to best prepare for FSMA compliance requirements at the outset of this project. Consequently, in this project VAAFM focused on—

- Preparing the state's specialty crop industry for pending FSMA regulations and adoption of a state-level regulatory program;
- Developing both a functional and regulatory framework within VAAFM to create a produce program that accommodates FSMA and meets the produce industry's needs;
- Preparing VAAFM staff to participate in the FDA pilot program to conduct On-Farm FSMA Readiness Reviews and identify volunteer farms;

- Engagement on a national level with FDA regarding rule implementation, funding, and program creation.

GOALS AND OUTCOMES ACHIEVED

Expected Outcome 1

Identify the impact of FSMA regulations on Vermont's produce industry and wholesale market demand.

We achieved this outcome by analyzing and sharing VAAFM produce industry survey results and 2012 Census of Agriculture data from the National Agricultural Statistics Service (NASS). The Program Coordinator consulted with NASS and FDA on data needs for state-level produce safety program development, and as a result NASS completed special calculations of the raw 2012 Ag Census data to show the estimated number of farms per state that grow, harvest, pack, or hold produce and the number of these farms that will be covered or possible exempt under the Produce Safety Rule.

The produce survey and NASS data provided the foundational statistics that were used in the creation of Vermont's Produce Program Cooperative Agreement response to FDA's request for proposals. Our initial estimate of 1,000–1,200 Vermont produce farms aligns with the NASS figure of 1,148.

Our market demand assessment began later in 2017 (after the program transitioned to FDA cooperative agreement funding) and included discussion with regional buyers and distributors about their food safety expectations of the produce industry. At this time, the potential impact of the FSMA Produce Safety Rule on wholesale buyer expectations remains unclear, with many of the buyers we spoke with preferring to wait until the rule is implemented before changing current requirements. We anticipate a greater need for buyer education about FSMA requirements and exemption.

Expected Outcome 2

Collect feedback from produce industry on a state-level produce safety regulatory program in order to develop a Vermont Produce Safety Program that meets industry needs.

We achieved this outcome through produce industry outreach efforts to guide our development of a state-level produce safety program that meets federal rule requirements, preventive health, and market access needs of produce farms of all sizes and stage of development. These efforts included meetings with the Vermont Vegetable & Berry Growers Association (VVBGA) Board of Directors, presentations at the annuals meetings of the VVBGA, the Vermont Tree Fruit Growers Association, a workshop held at the Northeast Organic Farming Association of Vermont Winter Conference, and a workshop hosted by the Addison County Relocalization Network. We also organized three educational workshops on FSMA and the Produce Safety Rule in Montpelier, Burlington, and Rutland during March and April 2016.

As a result of feedback obtained at these events, Vermont, along with all other interested states, were invited to submit a proposal to FDA of a 5-year strategy to development of a state-level produce safety program. Vermont successfully submitted a proposal for \$3.625 million over 5-years for the creation of an outreach, education, technical assistance, and regulatory enforcement program housed at VAAFM. This strategy was informed by a few stakeholder conversations, internal VAAFM conversations, and discussions with critical partners including Vermont Department of Health (VDH) and UVM Extension.

Critical components of this 5-year plan, from September 5, 2016–June 30, 2021, include the following:

- Create and utilize a multi-year strategic plan that identifies resources needed to implement a produce safety program, that aligns with FDA's Produce Safety Rule, and that contains metrics and outcomes to evaluate its effectiveness.

- Develop a state-level produce safety inspectional program that meets FDA requirements and supports public health. VAAFM will undergo a comprehensive self-assessment to determine the components needed to create a regulatory and enforcement program, which includes conducting legislative research and infrastructure development along with determining organizational structure and human resources needed.
- Establish a strong education and technical assistance component to the regulatory program that ensures producers feel educated and supported with tools to achieve compliance with the Produce Safety Rule.
- Implement a program that includes Produce Safety Rule education and training for produce farmers covered under the rule as well as robust regulator training for our VAAFM staff.

Expected Outcome 3

Formulate Vermont statutory authority language to develop the framework of a Vermont Produce Safety Program.

We achieved this outcome through engagement with the Vermont State Legislature to educate lawmakers about the Produce Safety Rule and its potential impact on Vermont growers. This process resulted in Act 104, *An act relating to State enforcement of the federal Food Safety Modernization Act*, which was signed by Vermont Governor Shumlin in May 2016. This Act provides the Vermont Agency of Agriculture with the authority to inspect farms covered by the Produce Safety Rule and further development Vermont's produce safety program. Act 104 is now incorporated into Vermont's statutes under Title 6: Agriculture, Chapter 66: Produce Inspection (<https://legislature.vermont.gov/statutes/chapter/06/066>).

Expected Outcome 4

Conduct On-Farm Readiness Reviews to prepare producers for FSMA compliance.

Because of a national delay in development of On-Farm Readiness Review (OFRR) materials and execution of the pilot program for testing the tool under an FDA/State/Extension partnership, Vermont did not host an OFRR pilot as planned in 2016. Vermont did host an OFRR pilot with two Vermont produce farms in June 2017, but at this time the Vermont Produce Program had transitioned to FDA cooperative agreement funding.

Expected Outcome 5

Maintain FSMA policy liaison efforts.

We achieved this outcome through continued conversations with state and national partners regarding FSMA Produce Safety Rule implementation. VAAFM staff remain involved in FDA/NASDA working groups, national meetings, and conferences pertaining to the implementation of state Produce Safety Rule implementation strategies. VAAFM staff participate in the following FDA/NASDA working groups:

- Implementation Group
- On-Farm Readiness Review Team
- IT/Farm Inventory
- Regulator Education and Training
- Strategic Planning Template Development
- Inspectional Approach/Develop Processes/Mechanisms for Initiation/Application of Enforcement Actions
- Produce Safety Regulator Training Review Team

VAAFM also established a preliminary internal structure to our Produce Program in order to complete our application for FDA cooperative agreement funding. This is an ongoing Agency-level conversation that we share with other partners within Vermont and nationally. We have drafted a strategic plan and communications plan and will continue to expand and test this design as our program develops.

BENEFICIARIES

The primary beneficiaries of this project are the estimated 1,148 Vermont farms that grow and sell produce (2012 U.S. Census of Agriculture, National Agricultural Statistics Service). These farms will be directly affected by the Food Safety Modernization Act Produce Safety Rule and its compliance requirements and/or may be affected by increased market demands for documentation of on-farm produce safety practices. These growers include beginning farmers & socially disadvantaged farmers.

Vermont produce safety stakeholders, including University of Vermont Extension, the Vermont Vegetable and Berry Growers Association, the Vermont Tree Fruit Growers Association, and the Vermont Department of Health's Food and Lodging Program have benefited from the establishment of the Vermont Produce Program and its various resources and complimentary support along the produce safety education and regulation continuum.

Additional beneficiaries include the 40+ states now developing produce safety programs under FDA's Cooperative Agreement Program (CAP) who have benefited from Vermont's early program development, initiated by this SCBGP funding. The Vermont Agency of Agriculture, Food and Markets has provided guidance and resources through direct requests from other states undergoing program development as well as through regional or national presentations and conference calls hosted by FDA, the National Association of State Departments of Agriculture (NASDA), the Northeast Center to Advance Food Safety (NECAFS), and the Produce Safety Alliance (PSA).

LESSONS LEARNED

One significant hurdle involved the authorization to move ahead with the scope of work and hiring of staff associated with the FDA cooperative agreement. The administrative process at the state level delayed the hiring of legal counsel support to engage on regulatory framework components and additional staff to support industry outreach and educational activities. While this SCBGP project was not billed for those tasks, the scope of work assigned to the Program Coordinator under this project was adjusted according to the altered timeline and priorities of program design and development. After this technical hurdle was overcome in late 2016, VAAFM received permission to hire four additional employees and a legal services contractor. We hired four Produce Program positions and contracted legal counsel to support program development, all under FDA cooperative agreement funding, in 2017.

SCBGP funding supported the Program Coordinator's salary and expenses through December 2016. As of January 2017, funding for ongoing development of the Vermont Produce Program transitioned to the Vermont Agency of Agriculture's cooperative agreement with FDA. This cooperative agreement was awarded on September 5, 2016.

CONTACT PERSON

Abbey Willard, Agricultural Development Division Director
abbey.willard@vermont.gov | (802) 272-2885

ADDITIONAL INFORMATION

Vermont Statutes Title 6: Agriculture, Chapter 66: Produce Inspection

<https://legislature.vermont.gov/statutes/fullchapter/06/066>

Vermont Produce Program

The Vermont Produce Program is a cross-divisional team within the Agency of Agriculture working to support produce growers in the areas of market development, market access, and produce safety.

<http://agriculture.vermont.gov/produceprogram>

Slides Developed and Delivered to Stakeholder Groups Throughout 2016



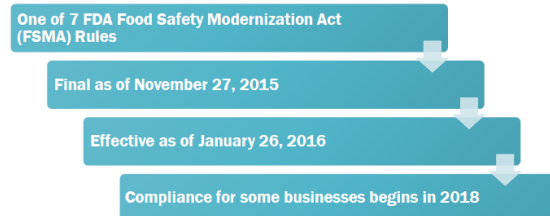
Objectives of the Vermont State Produce Safety Program

1. FSMA Produce Safety Rule will impact Vermont farmers and we want a local liaison between industry and FDA
2. Ensure that producers can meet market demand for food safety and compete in the regional marketplace
3. Provide education and technical assistance to ensure compliance prior to enforcement ("educate before—and while—you regulate")
4. Support public health
5. Achieve market access and meet buyer demand

Feedback from Industry

1. Overall support for the Agency to stand up a program and provide FSMA compliance inspections. Buy-in for the "produce safety continuum" concept—education and technical assistance for all farms—and tiered approach—focus on farms that are required to comply with the federal rule first.
2. Meeting participants have expressed concerns that FDA will be looking at VT farms through eyes that are used to CA and NJ farms.
3. Growers would prefer Agency presence on farms.
4. Meeting participants felt that they have a better relationship with the Agency than with FDA and that the enforcement process would be more reasonable.
5. Agency is mission-driven to support agriculture.

FSMA Produce Safety Rule



VAAFM Roles & Accomplishments



VAAFM Roles & Accomplishments



Who's covered?

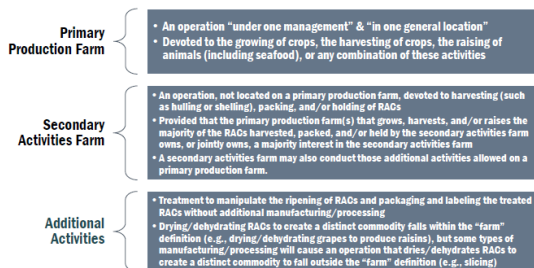
Farms with greater than \$25,000 in annual produce sales (averaged over 3 years) are subject to the FSMA Produce Safety Rule—but requirements vary.

Key Definitions

Farm Definition
Covered Activities
Covered Produce
Covered Farms

Qualified Exempt Farms
Very Small Businesses
Small Businesses
"All Other Businesses"

FDA Definition of a Farm



Covered Activities

Growing, Harvesting, Packing, or Holding of Produce for Human Consumption

Covered Produce

Produce that is a raw agricultural commodity (RAC) except for "produce that is rarely consumed raw," specifically the produce on the following exhaustive list:

asparagus; black, great northern, kidney, lima, navy, and pinto beans; beets; sour cherries; chickpeas; cocoa beans; coffee beans; collards; sweet corn; cranberries; dates; dill (seeds and weed); eggplants; figs; ginger; hazelnuts; horseradish; lentils; okra; peanuts; pecans; peppermint; potatoes; pumpkins; winter squash; sweet potatoes; water chestnuts.

Specific Requirements for Sprouts

The final rule includes new requirements to prevent the contamination of sprouts.

Sprout operations will have less time to come into compliance with the rule than farms growing other types of produce.

Sprout operations will have one to three years to comply based on the size of their operation, with no additional time to meet the water requirements.

Covered Farms

Category	Threshold	Compliance Date
Not Covered	Less than \$25,000 in annual produce sales	n/a
Qualified Exemption	Must have food sales averaging less than \$500,000 per year during the previous three years; and more than 50% of the farm's sales must be to qualified end-users. A qualified end-user is (a) the consumer of the food or (b) a restaurant or retail food establishment within the same state or not more than 275 miles away—direct to consumer; direct to restaurant; direct to retail. Compliance date for retention of records supporting qualified exemption Compliance date for labeling requirements	January 26, 2018 January 26, 2020
Very Small Business	Less than \$250,000 in annual produce sales	January 26, 2020
Small Business	Less than \$500,000 in annual produce sales	January 26, 2019
All Other Businesses	Not in the above categories	January 26, 2018

Commercial Processing Exemption

Farms are eligible for a commercial processing exemption if *all* covered produce sold undergoes *commercial processing*.

Commercial processing includes manufacturing or processing produce with a method that adequately reduces the presence of microorganisms of public health significance, i.e., those that could cause serious adverse health consequences.

Processing methods that include a "kill step"

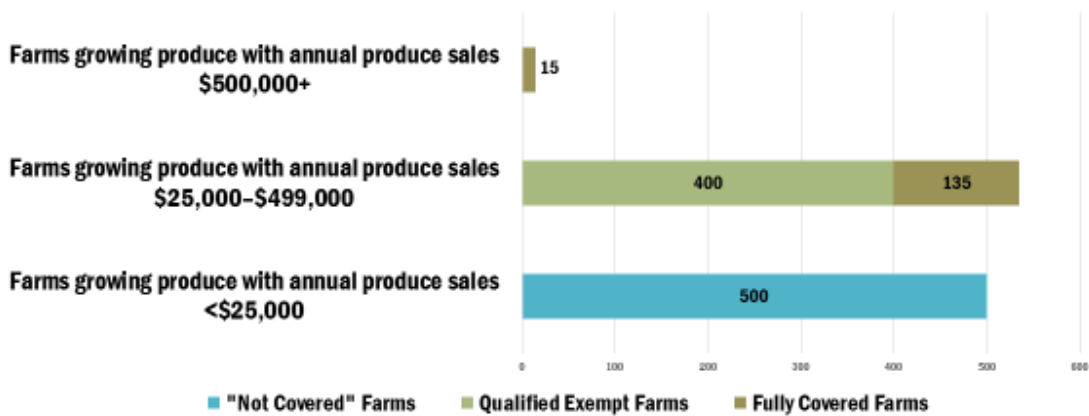
Commercial canning

Beer, wine & cider making

The rule does require businesses eligible for a commercial processing exemption to keep records, including records of the individual or business that performs the commercial processing.

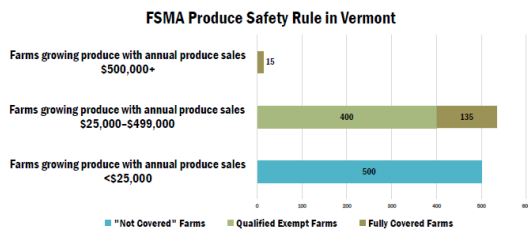
Vermont State Impact

FSMA Produce Safety Rule in Vermont



Estimates based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA) in August 2015.

Vermont State Impact



Estimates based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA) in August 2015.

Key Requirements (Covered Farms)

Agricultural Water (Testing)

Water used for washing hands, on food contact surfaces, to directly contact produce, for sprout irrigation, and other uses where dangerous microbes could be transferred to produce through direct or indirect contact
Water applied directly to growing produce (other than sprouts)

Biological Soil Amendments

Raw Manure
Stabilized Compost

Domesticated & Wild Animals

Worker Training & Health and Hygiene

Equipment, Tools & Buildings

Modified Requirements (Qualified Exempt Farms)

Record-keeping

A farm eligible for a qualified exemption must establish and keep adequate records necessary to demonstrate that the farm satisfies the criteria for a qualified exemption, including a written record reflecting that you have performed an annual review and verification of your farm's continued eligibility for the qualified exemption.

Farms eligible for a qualified exemption should begin keeping records to support their eligibility now.

Compliance date for retention of records supporting eligibility under the qualified exemption: January 26, 2016

Labeling

A qualified exempt farm must label produce covered under the Produce Safety rule with the name and complete business address of the farm where the produce was grown on produce packaging; at the point of purchase; on documents delivered with the produce; or in an electronic notice (in the case of internet sales).

A farm's qualified exemption may be withdrawn.

Variances & Alternatives

A state, tribe, or foreign country may petition FDA for a variance from some or all provisions if necessary in light of local growing conditions

Practices under the variance need to provide the same level of public health protection as the rule and not increase the risk that produce is adulterated

Alternatives – Flexibility

Farms may establish alternatives to certain, specified requirements only
Farm must have scientific information that the alternative provides the same level of public health protection as the relevant requirement and does not increase the likelihood of adulteration

Stakeholder Outreach

Targeted Stakeholder Meeting – September 22, 2015

VBGA Board Meeting – November 16, 2016

New England Public Meeting with FDA – December 14, 2016

Farm to Plate Aggregation & Distribution Working Group – January 8, 2016

VBGA Annual Meeting – January 25, 2016

NOFA-VT Winter Conference workshop (with Roger Noonan, NE Farmers Union) – February 13, 2016

Vermont Tree Fruit Growers Annual Meeting – February 28, 2016

ACORN Workshop – March 15, 2016

Available Now: Online Decision Tree Tool: <https://www.surveymonkey.com/r/vtfsma>

Upcoming: Educational Workshops on March 31, April 4 & April 5

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Upcoming: Educational Workshops on March 31, April 4 & April 5

State Collaboration with FDA

Over the past three years, states have worked with FDA to develop a Model Produce Safety Implementation Framework.

- FDA does not have the resources or expertise to inspect farms.
- States are preparing to build programs to provide outreach, education, and technical assistance as well to eventually conduct inspections.
- We want to ensure that producers can meet market demand for food safety/FSMA compliance certification.

Objectives of State Produce Program

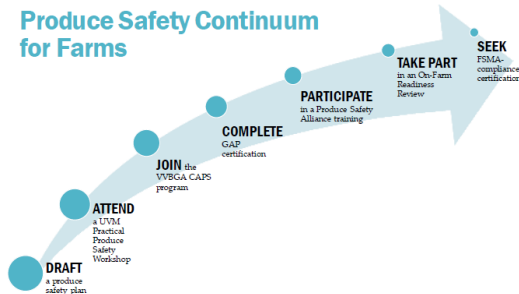
1. FSMA Produce Safety Rule will impact Vermont farmers, and we want a local liaison between industry and FDA
2. Ensure that producers can meet market demand for food safety and compete in the regional marketplace
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DRAFT Mission Statement

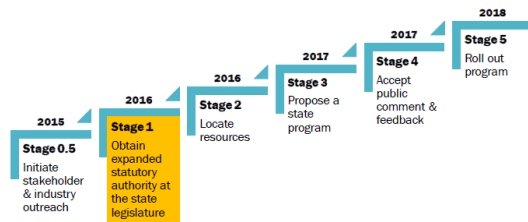
The Vermont Produce Program will help to grow Vermont’s produce industry—in the face of regulations and evolving market expectations—by aiding produce farms of all sizes and stages of development to meet food safety requirements, access markets, and promote public health as sustainable agricultural businesses.

This cross-divisional program will serve Vermont farms that grow and sell produce and engage critical external partners across a **produce safety program continuum**.

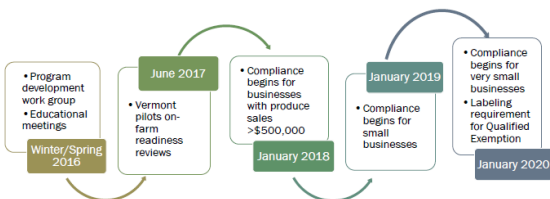
Produce Safety Continuum for Farms



Stages of Program Development



Industry Preparation Timeline



* Inspection dates and frequency not yet determined

What does the rule focus on?

Conditions and practices identified as potential contributing factors for microbial contamination, including—

- Agricultural water
- Biological soil amendments of animal origin (BSAAO)
 - Raw manure
 - Stabilized compost
- Worker health & hygiene
- Equipment, tools, buildings & sanitation
- Domesticated & wild animals

Standards for Agricultural Water I

Uses of agricultural water in which it is reasonably likely that potentially dangerous microbes, if present, would be transferred to produce through direct or indirect contact

No detectable generic E. coli

Water used for washing hands, during and after harvest, used on food contact surfaces, used to directly contact produce (including to make ice) during or after harvest

Water must be immediately discontinued and corrective actions taken before re-use for any of these purposes if generic E. coli is detected

The rule prohibits use of untreated surface water for any of these purposes

Standards for Agricultural Water II

Water applied directly to growing produce (other than sprouts)

Criteria based on two values: geometric mean (GM) and statistical threshold (STV)

GM is a mean representing the average amount of generic E. coli in a water source

STV represents variability in water quality: E. coli levels during adverse conditions, like rainfall

Online or spreadsheet calculators will be available

If the water does not meet these criteria, corrective actions are required as soon as is practicable, but no later than the following year.

Allow time for potentially dangerous microbes to die off on the field by using a time interval between last irrigation and harvest—but no more than four consecutive days

Allow time for potentially dangerous microbes to die off between harvest and end of storage or to be removed during commercial activities such as washing

Treat the water

Water Testing I

Untreated surface water

Initial survey: at least 20 samples over 2–4 years

Collected as close as is practicable to harvest

Annual survey: at least 5 samples

Rolling dataset of 20 samples

Untreated ground water directly applied to growing produce (other than sprouts)

Initial survey: at least 4 samples

Collected as close as is practicable to harvest, during the growing season or over a period of one year.

Annual survey: at least 1 sample

Rolling dataset of 4 samples

Water Testing II

Untreated ground water used for purposes where no detectable generic E. coli is allowed

Initial survey: test untreated ground water at least 4 times during the growing season or over a period of 1 year

Determine what the water can be used for:

If the 4 initial sample results meet the no detectable generic E. coli criterion, testing can be done once annually thereafter, using a minimum of 1 sample.

Farms must resume testing at least 4 times per growing season or year if any annual test fails to meet the microbial quality criterion.

No requirement to test agricultural water that is received from public water systems

OR if the water is treated in compliance with the rule's treatment requirements

Biological Soil Amendments of Animal Origin (BSAAO)

Raw Manure

Final standard pending

For now, FDA "does not object" to farmers complying with National Organic Program standards: 120-day interval between the application of raw manure for crops in contact with the soil & 90 days for crops not in contact with the soil

Raw manure must not contact covered produce during application

Minimize potential for contact with covered produce after application

Stabilized Compost

Rule includes 2 examples of scientifically valid composting methods

Stabilized compost prepared using either of these methods must be applied in a manner that minimizes potential for contact with produce during and after application

Worker Health & Hygiene

Attend a Produce Safety Alliance (or equivalent) training

Train workers in health and hygiene

Provide access to toilets and hand washing facilities

Ensure sick workers do not handle covered produce

Equipment, Tools, Buildings and Sanitation

Prevent these sources, and inadequate sanitation, from contaminating produce.

Required measures to prevent contamination of covered produce and food contact surfaces include, for example, appropriate storage, maintenance and cleaning of equipment

Equipment, tools and buildings should be cleanable (and able to be sanitized where necessary)

Food-packing material must be "appropriate for use"

Example: wooden crates

Domesticated and Wild Animals

Unified requirements for grazing, working, and wild animals:

Assess, as needed, relevant areas during growing for potential animal contamination;

If significant evidence of potential contamination is found (e.g., animal excreta, animal observation or destruction),

Evaluate whether covered produce can be harvested

Take steps throughout the growing season to ensure that covered produce that is reasonably likely to be contaminated will not be harvested

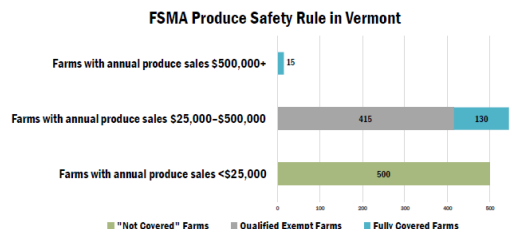
Food Safety Modernization Act Educational Workshops

FSMA Produce Safety Rule & Program Development Workshop
March 31, 2016 2:00–4:00 PM
 Pavilion Auditorium 109 State Street, Montpelier

FSMA Preventive Controls & Produce Safety Rule Workshop
CO-HOSTED BY THE VERMONT DEPARTMENT OF HEALTH
April 4, 2016 2:00–4:00 PM
 Vermont Department of Health 108 Cherry Street, Burlington

FSMA Produce Safety Rule & Program Development Workshop
April 5, 2016 5:30–7:30 PM
 Rutland Free Library 10 Court Street, Rutland

Vermont State Impact



Estimates based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA) in August 2015.

Vermont Produce Program Development

2015	2016	2017	2018
<ul style="list-style-type: none"> Initiate stakeholder & industry outreach Develop relationships with FDA and National Association of State Departments of Agriculture (NASDA) 	<ul style="list-style-type: none"> Obtain expanded statutory authority at the state legislature Obtain resources for program from FDA & hire staff Develop education, outreach & training Seek guidance from industry advisory group 	<ul style="list-style-type: none"> Develop regulatory program framework Hire & train inspection staff Pilot On-Farm Readiness Reviews (OFRR) Continue to work with federal, state & industry partners 	<ul style="list-style-type: none"> Continue to deliver OFRR and technical assistance Launch Capital Infrastructure Grant Program Begin mandatory inspections for farms with \$500,000+ in annual produce sales

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5 Year FDA Cooperative Agreement Program Components

Outreach, Education & Technical Assistance	<ul style="list-style-type: none"> Staff: 2 positions focused on outreach & education Collaboration with UVM Extension Grower training On-Farm Readiness Reviews
Compliance	<ul style="list-style-type: none"> Staff: 3 inspectors by 2019 Inspections for fully covered farms beginning in 2018 Facilitate implementation of water testing requirements



Produce Safety Infrastructure Improvement Program

Proposed

Kristina Sweet, Vermont Agency of Agriculture, kristina.sweet@vermont.gov

Administered by the Vermont Agency of Agriculture, Food & Markets

Funded (if approved) through a request to the Vermont State Legislature

Problem Statement / Issue Definition:

The goal of this program is to provide cost share payments and technical assistance to produce operations seeking to improve on-farm food safety capabilities. Priority will be given to operations seeking to meet federal food safety requirements.



Approach / Methods:

If funding is secured, we will release an RFP in early 2018. Participants selected to receive grants will be required to provide a 1-to-1 match (up to 50% in-kind). Producers will be able to apply for up to \$15,000 in grant funds, and up to \$50,000 will be utilized for producer technical assistance.

Total annual request: \$200,000
Funding reserved for TA: \$50,000
Total available for grants: \$150,000

Results / Outcomes:

This program, if successful, will allow Vermont produce growers to meet produce safety requirements and maintain access to critical wholesale and retail markets. Ongoing infrastructure support to the industry will be assessed following this two-year pilot to determine its long-term utility.

Project 9: Produce Farm Water Testing Pilot

PROJECT SUMMARY

The purpose of this project was to produce educational materials for produce growers on how to take an accurate water sample and prepare it for delivery/shipment to a qualified laboratory, work with up to three growers to build preliminary microbial water quality profiles (MWQP) for surface water sources, and provide Vermont Produce Program staff with the appropriate technical background to assist growers in this area. This project helps Vermont produce growers prepare for Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR) water testing requirements and/or meet voluntary produce safety program certification requirements for water testing.

The costs of complying with the Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR) present challenges for produce growers across the U.S. Based on the FDA Analysis of Economic Impacts – Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, the total first year compliance costs (assuming uniform compliance periods) for all covered produce farms in the United States is approximately \$700 million with subsequent total recurring costs of approximately \$365 million. The expected average cost per farm across the country is \$10,350.83 (FDA 2015). Some requirements of the Produce Safety Rule will require significant cash investment from growers, such as laboratory testing of agricultural water and associated recordkeeping. The Vermont Agency of Agriculture has committed to providing outreach and education to help growers understand how to meet PSR requirements. One area that has posed significant concern and confusion is Subpart E – Agricultural Water (21 CFR §112.41–§112.50).

Concurrently, many produce growers are experiencing increased demand for documentation of on-farm food safety practices from wholesale and retail buyers, such as completion of USDA Good Agricultural Practices (GAP) audits or the Vermont Vegetable & Berry Growers Association (VVBGA) Community Accreditation for Produce Safety (CAPS) program. (Both of these standards require water testing.) Such increased buyer requirements apply to farms whether they are covered by the PSR, Qualified Exempt, or not covered by the rule at all.

The FSMA PSR Subpart E – Agriculture Water (21 CFR §112.41–§112.50) includes requirements for those covered under the rule to perform routine agricultural water testing. While the U.S. Food & Drug Administration (FDA) has proposed extending the timeline for compliance with Subpart E, this proposed extension has not yet been finalized, and many produce growers are anxious to understand Subpart E's requirements for water testing and how to implement them.

PROJECT APPROACH

In order to help Vermont produce growers prepare for FSMA PSR water testing requirements and/or meet voluntary produce safety program certification requirements for water testing, the Vermont Agency of Agriculture's Produce Program worked with four Vermont produce farms on water sampling and testing and produced the following:

- “Water Sampling 101” Factsheet: A factsheet for Vermont produce growers with detailed step-by-step instructions on how to take an agricultural water sample and prepare it for shipment to a qualified laboratory.
- “Water Sampling 101” Video: A video for Vermont produce growers containing detailed step-by-step instructions on how to take an agricultural water sample and prepare it for shipment to a qualified laboratory. Video also includes a brief interview with Intervale Community Farm Manager Andy Jones, on his experience with and questions about agricultural water and testing.
- “Getting to Know Vermont’s Agricultural Water” Article: An article summarizing the activities that the Produce Program performed related to agricultural water including information on the following subjects: FSMA PSR agricultural water requirements; resources developed and technical assistance available; FDA Water Tour² summary; what produce growers should do now.
- “Agricultural Water Testing Labs in Vermont and Neighboring States” Factsheet: This factsheet provides contact information for laboratories in Vermont and neighboring states that offer agricultural water testing services and tests recognized by FDA.

We disseminated the “Water Sampling 101” factsheet, “Water Sampling 101” video, and “Getting to Know Vermont’s Agricultural Water” article via the Vermont Produce Portal membership list; the monthly Vermont Agency of Agriculture newspaper, Agriview; the Vermont Produce Program webpage; and Agency of Agriculture social media accounts.

Vermont Agency of Agriculture staff completed this project in partnership with farms that made water sources available for testing: Cedar Circle Farm & Education Center, Intervale Community Farm, Jericho Settlers Farm, River Berry Farm.

GOALS AND OUTCOMES ACHIEVED

Vermont Produce Program staff Tucker Diego, Dominique Giroux, and Kristina Sweet worked with four Vermont produce farms, took at least five samples at each farm, and sent or delivered each sample to a laboratory for results. Water test results were provided to each of the four farms.

In addition, five tests were taken from a single sample point from the Connecticut River and delivered to five different labs. The water sample results from each of the labs fell within a range of 20 – 34 MPN (most probable number) units of generic *E. coli* per 100 mL of water. The difference in MPN results could derive from a few variables: difference in water sample taken, hold time, and temperature. It took two

² FDA Water Tour: The Vermont Agency of Agriculture hosted FDA for a series of farm visits in Vermont and New Hampshire on August 29–30, 2018. The purpose of this tour was to help the FDA team working on revising Produce Safety Rule water requirements to learn more about how farms use available surface and ground water sources and receive feedback from farmers on how water testing requirements will impact their businesses.

scoops of water to fill the five sample bottles; it's probable that the scoops consisted of different MPN because a river is, of course, a moving target. The hold time – the time between sampling and processing – varied between the labs, can also have an impact on sample quality. Two of the sample bottles were processed within the same day, while the other three were processed the following day. Temperature may also have been a factor: it is recommended that a sample stay below 50°F, but not frozen, during transport. While measures were taken to chill samples, some had a longer hold time, resulting in varying temperatures. Throughout these activities, program staff developed expertise in water sampling including reviewing and analyzing test results.

Goal	Performance Measure	Benchmark	Target	Outcome
Provide produce grower outreach and education	Progress toward this goal will be measured by production and dissemination of an educational video, an article containing a summary of findings, and a lab fact sheet.	We do not currently have educational materials on water testing for Vermont produce growers	1 video, 1 article and 1 fact sheet produced and disseminated via the Vermont Produce Program website at agriculture.vermont.gov/produceprogram , email (both listservs and direct email to growers), and social media (Facebook, Twitter, Instagram) as well as our agency newspaper, Agriview	1 video "Water Sampling 101"; 1 article "Getting to Know Vermont's Agricultural Water"; 2 fact sheets "Water Sampling 101" and "Agricultural Water Testing Labs in Vermont and Neighboring States" Materials shared with growers via the Vermont Produce Portal, Produce Program website, social media, and agency newspaper Agriview
Develop internal program expertise on water sampling and	Progress toward this goal will be measured by the number of water samples taken and test results	Our team does not currently have experience in water sampling	At least 12 water samples taken and delivered/shipped to at least 6 labs (min. 1 surface water and 1	21 samples taken from 4 different farms and delivered to 5 labs*

reviewing/analyzing test results	reviewed/analyzed	and reviewing test results	ground water sample/lab) Results for each reviewed/analyzed	Results were analyzed and reported in the "Getting to Know Vermont's Agricultural Water article"
Assist 1–3 produce growers with establishing microbial water quality profiles (MQWP) for surface water sources	Progress toward this goal will be measured by the number of samples taken and test results provided to growers	Establishing MQWP is a new activity for Vermont produce growers	At least 5 samples per water source/farm, the minimum number to establish a MQWP	Surface and ground water sampling completed at 4 produce farms Each farm, at minimum, had 5 samples taken from an irrigation surface water source

*See Lessons Learned.

BENEFICIARIES

Vermont produce growers are the primary beneficiaries of this project. USDA National Agricultural Statistics Services (NASS) 2012 U.S. Census of Agriculture data indicates that 1,144 Vermont farms grow and sell produce. In addition to social media outreach, we distributed information (fact sheets, articles, videos) produced through this project to the 220+ Vermont produce farms through the Vermont Produce Portal. Additionally, the Vermont Agency of Agriculture newspaper, Agriview, reaches over 5,000 farms.

LESSONS LEARNED

A strong conclusion that was drawn throughout this process was that while it is beneficial to sample agricultural water, it is understanding how to use that information and the associated risk factors of agricultural water on farms that will assist in reducing microbial contamination risk of produce.

Project staff were also able to understand the importance of sample time relating to environmental factors. Several samples were taken during heavy rainstorms leading to unusually high sample results. This is useful information when educating produce growers on when to take a sample and also when, and when not to, irrigate their crops.

Originally, we had planned to send the samples taken from a single source sample point to six laboratories but ended up taking samples to five. This is due to the time limitations on the hours of

operation and sample site pick up times at the Certified National Analytics Lab in Glen Falls, NY in addition to the higher than estimated cost of shipping from the sampling locations to this lab.

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ADDITIONAL INFORMATION

“Water Sampling 101” video and “Getting to Know Vermont’s Agricultural Water” article:
<https://agriculture.vermont.gov/agency-agriculture-food-markets-news/produce-safety-special-feature-getting-know-vermont%E2%80%99s>

“Water Sampling 101” factsheet:
<https://agriculture.vermont.gov/sites/ag/files/PDF/ProduceProgram/Water%20Sampling%20101.pdf>

“Agricultural Water Testing Labs in Vermont and Neighboring States” factsheet:
<https://agriculture.vermont.gov/sites/ag/files/PDF/ProduceProgram/Agricultural%20Water%20Testing%20Labs%20-%20VT%20and%20neighboring%20states.pdf>